Report No. CG-D-22-94

Assessment of the Impressions of Station Personnel on the Effectiveness and Suitability of the 47-Foot Motor Life Boat (MLB)

Alvah C. Bittner, Jr.
Rhonda A. Kinghorn

Battelle Human Factors Transportation Center
Seattle, WA 98105-5428

and

Antonio B. Carvalhais

U.S. Coast Guard
Research and Development Center
1082 Shennecossett Road
Groton, CT 06340-6096

FINAL REPORT
SEPTEMBER 1994

Prepared for:

U.S. Department of Transportation
United States Coast Guard
Office of Engineering, Logistics, and Development
Washington, DC 20593-0001

NOTICE

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

The contents of this report reflect the views of the Coast Guard Research & Development Center. This report does not constitute a standard, specification, or regulation.

D. L. Motherway
Technical Director, Acting
United States Coast Guard
Research & Development Center
1082 Shennecossett Road
Groton, CT 06340-6096

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
CG-D-22-94		

4. Title and Subtitle

Assessment of the Impressions of Station Personnel on the Effectiveness and Suitability of the 47-Foot Motor Life Boat (MLS)

5. Report Date
September 1994

6. Performing Organization Code

8. Performing Organization Report No
R&DC 26/94

7. Author(s)
Alvah C. Bittner, Rhonda A. Kinghorn, and Antonio B. Carvalhais

9. Performing Organization Name and Address

Battelle Human Factors Transportation Center
4000 NE 41st Street
Seattle, WA 98105-5428

U.S. Coast Guard
Research and Development Center
1082 Shennecossett Road
Groton, CT 06340-6096

10. Work Unit No. (TRAIS)

11. Contract or Grant No.

13. Type of Report and Period Covered
Final Report

12. Sponsoring Agency Name and Address

Department of Transportation
U.S. Coast Guard
Office of Engineering, Logistics, and Development
Washington, D.C. 20593-0001

14. Sponsoring Agency Code

15. Supplementary Notes
The Coast Guard technical contact and COTR is Dr. Antonio B. Carvalhais, 203-441-2846.

16. Abstract

The Coast Guard is in the process of evaluating a new 47-Foot Motor Life Boat (MLB) to replace the aging 44-Foot MLB. As part of the Operational Test and Evaluation (OT&E) of the 47-Foot MLB, survey and small group discussions were conducted to assess crew impressions of the suitability and effectiveness of various aspects of boat operations and handling of the new vessel for performing MLB mission requirements (search and rescue, law enforcement, boating safety, etc.). One hundred and twenty crew members from five small boat station evaluation sites, representing a range of rates, ranks, experience levels, and typically fully qualified on both the 47-Foot and the 44-Foot MLB, participated in the evaluation. In general, the 47-Foot MLB received consistently superior ratings for all comparisons. The only exception was firefighting capability, where the 47-Foot MLB showed less favorable capabilities. Nine areas were identified as requiring further enhancements to improve the effectiveness and suitability of the 47-Foot MLB. Three general conclusions were drawn from this assessment. The new 47-Foot MLB:

- *represents a significant improvement over the 44-Foot MLB.*
- *is considered near the "ideal" MLB vessel, but does have room for improvements in some areas.*
- *will be an effective and suitable replacement for the 44-Foot MLB, particularly after the identified issues for improvement are addressed.*

17. Key Words		18. Distribution Statement
Motor Life Boat (MLB) suitability effectiveness	safety performance Small Boat Station	Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22161

19. Security Classif. (of this report)	20. SECURITY CLASSIF. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED		

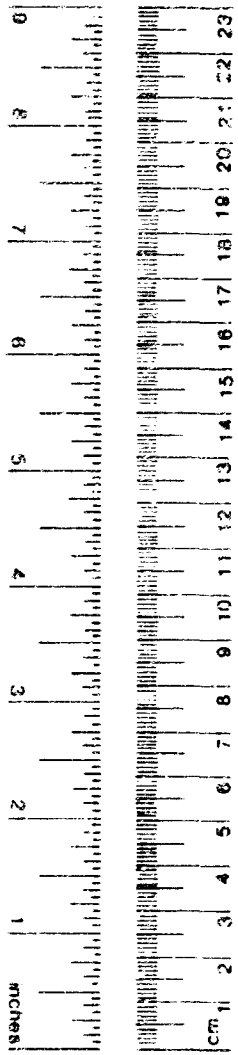
Form DOT F 1700.7 (8/72) Reproduction of form and completed page is authorized

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

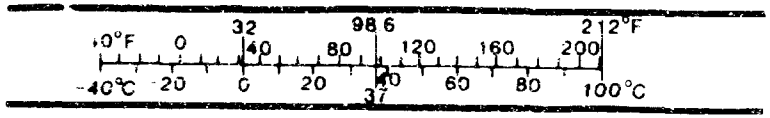
Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
in	inches	* 2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (WEIGHT)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (EXACT)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

* 1 in = 2.54 (exactly)



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (WEIGHT)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	0.125	cups	c
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (EXACT)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



EXECUTIVE SUMMARY

The Coast Guard is in the process of evaluating a new 47-Foot Motor Life Boat (MLB) to replace the aging 44-Foot MLB. As part of the Operational Test and Evaluation (OT&E), survey and small group discussions were conducted to assess crew impressions of the suitability and effectiveness of the new vessel at performing MLB mission requirements (search and rescue, law enforcement, boating safety, etc.). A survey was developed to capture crew ratings of various aspects of boat operations and handling (e.g., Surf Operations, Towing, Personnel Recovery, Maintenance, etc.). The survey consisted of three sections:

- background information (age, gender, rate, experience with the 47-Foot and 44-Foot MLBs, etc.)
- comparison of the 47-Foot MLB with the "ideal" MLB vessel on aspects of boat operations and handling, and
- comparison of the 47-Foot MLB with the 44-Foot MLB on aspects of boat operations and handling

Small group discussions were conducted to supplement the information collected with the survey, as well as offer an opportunity for crew members to reveal deficiencies not addressed in the survey. Problem areas and "wish list" items, items crew members desired to have included in the current design, were identified and discussed in the small group setting.

One hundred and twenty crew members from five small boat station evaluation sites, representing unique operational and environmental conditions, participated in the evaluation. Participation was limited to crew members with experience on both the 47-Foot and 44-Foot MLBs. The crew sample was well represented by a range of rates, ranks, and experience levels.

In general, the results of the survey revealed that the 47-Foot MLB received consistently superior ratings for both the "ideal MLB" and the 44-Foot MLB comparisons. The only exception was firefighting capability, where the 47-Foot MLB showed less favorable capabilities. However, supplemental information, as well as the small group discussions, revealed nine areas which require significant enhancements to improve the effectiveness and suitability of the 47-Foot MLB. These areas include:

- *Steering and throttles*
- *Communication equipment*
- *D-rings and handholds*
- *Navigation area*
- *Seating*
- *Head (bathroom)*
- *Maintenance*
- *HVAC system*
- *Firefighting equipment*

Three general conclusions are drawn based upon the body of results from the 47-Foot MLB crew surveys. The new 47-Foot MLB:

- *represents a significant improvement over the 44-Foot MLB.*
- *is considered near the "ideal" MLB vessel but does have consi. able room for improvements in some areas (notably the nine highlighted earlier).*
- *will be an effective and suitable replacement for the 44-Foot MLB, particularly after the identified issues for improvement are addressed.*

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES

LIST OF TABLES

1.0 INTRODUCTION

The acquisition of the new 47-Foot Motor Life Boat (MLB) includes a one-year Operational Test and Evaluation (OT&E) period. In support of the OT&E, a research effort was conducted to assess the operational suitability and effectiveness of the new vessel design for performing MLB mission requirements. Survey and small group discussions were conducted with station crew members to assess crew impressions of how well the 47-Foot MLB performs MLB duties. This report presents the results of the survey and small group discussions.

1.1 Operational Test & Evaluation Process

The United States Coast Guard (USCG) is in the process of evaluating a new 47-Foot MLB to replace the aging fleet of 44-Foot MLBs, which have been the service's primary heavy-weather rescue craft for the past 29 years. To ensure that the new boat meets or exceeds CG specifications and needs, an extensive evaluation of the new design has been underway since the Fall of 1990. The process began with the evaluation of a prototype 47-Foot MLB. The prototype evaluation revealed a number of deficiencies that could compromise crew safety and performance. Engineering change proposals (ECP) were generated to correct the deficiencies and incorporated into the design of five 47-Foot MLB pre-production vessels. The pre-production vessels will be used to conduct a one-year OT&E to evaluate all aspects of the boat during both normal station operations and structured, scenario-based tests. In support of the OT&E, the present effort evaluates the operational suitability and effectiveness of the 47-Foot MLB for performing MLB missions.

1.2 Mission of the 47-Foot MLB

USCG MLBs operate in very challenging environments. To meet these challenges, the new 47-Foot MLB has been designed to operate in 20-foot breaking seas and have self-righting capability (if accidentally capsized). The 47-Foot MLB also has many enhanced features over the 44-Foot MLB, including increased speed, different motion characteristics, and an enclosed bridge to protect crew members from harsh environments. The 47-Foot MLB requires a crew of four and has a nominal 200 nautical mile range. The boat also has been designed to operate for over nine hours at a sustained top speed in excess of 25 knots. Although the 47-Foot MLB's primary mission is search and rescue, it must be able to perform all small boat mission requirements which include: environmental response, enforcement of laws and treaties, boating safety, port safety and security, and aids to navigation. The 47-Foot MLB's mission and capability requirements provided the basis for the survey given at the five stations.

1.3 Purpose

The purpose of the present effort was to assess the impressions of CG crew members on the operational suitability and effectiveness of the 47-Foot MLB for performing various mission-related duties. Survey and small group discussions were used to collect crew impression data. The goals of this report are to document the results of the survey and small group discussions. Above all, this report will attempt to identify and define deficiencies with the current 47-Foot MLB that could compromise crew safety and ability to perform MLB mission requirements.

2.0 METHOD

2.1 Subject Crew Members

In order to control and assess the impact of environmental and operational conditions, five small boat stations, with unique environmental and operational characteristics, were selected as OT&E sites. Two of these stations were located on the West coast and three stations on the East coast. The five stations involved in the OT&E were:

- Station Tillamook, Garibaldi, OR
- Station Umpqua River, Reedsport, OR
- Station Gloucester, Gloucester, MA
- Station Cape May, Cape May, NJ
- Station Oregon Inlet, Rodanthe, NC

In all, 120 crew members from the above stations participated in this evaluation. Table 1 presents the demographic information of the crew population as well as their experience with the 44-Foot and 47-Foot MLBs. Six reservists from Station Gloucester completed only the small group discussion portion of the survey (described later in 2.2). These reservists were included, as they were fully qualified on the 47-Foot MLB and often serve with (or in place of) active duty crew members on the 47-Foot MLB.

Table 1. Crew member characteristics and experience.

Station	N	Mean Age	Years in USCG	Hours/ Week on 47-Foot MLB	Most Common Sea State (in feet)		Most Severe Sea State (in feet)		Average Mission Length (in hours)		Longest Mission (in hours)	
					44-Foot	47-Foot	44-Foot	47-Foot	44-Foot	47-Foot	44-Foot	47-Foot
Oregon Inlet	20	27	7	6	5	3	13	9	5	4	12	7
Tillamook	23	29	8	7	6	5	18	12	3	2	15	4
Umpqua River	22	27	6	10	6	6	17	9	4	3	14	6
Gloucester	14(6)	26	5	11	5	4	18	17	4	3	8	7
Cape May	35	27	6	8	5	4	11	9	3	2	8	6
Overall	114(6)	27	7	8	5	4	15	12	4	3	11	6

Note: N corresponds to the number of crew members at each station. The number of reservists, in addition to station personnel, is indicated in parentheses.

Crew members represented a range of rates and ranks who were either fully qualified on the 47-Foot MLB or were close to qualifying (generally only awaiting documenting letters). Table 2 shows the number of crew members in each rank by rate. In Appendix A more detailed crew member rank

information for each station may be found. More detailed operational experience information for each station by crew member rate can be found in Appendix B. Appendix C provides more detailed crew characteristic information for each station by crew member rate.

Table 2. Number of crew members in each rank by rating across all stations.

RANK	RATING			
	Seamen	Boatswain's Mates	Engineers & Firemen	Total
Seamen				
E-2: Apprentice	5	--	1	6
E-3: Seaman & Fireman	29	--	6	35
Petty Officers				
E-4: 3rd Class	--	15(1)	14(1)	29(2)
E-5: 2nd Class	1 MST	14(3)	6(1)	21(4)
E-6: 1st Class	--	8	4	12
Chiefs				
E-7: Chief	--	5	2	7
E-8: Senior Chief	--	1	0	1
E-9: Master Chief	--	1	0	1
Warrant Officers				
W-1: Warrant Officer	--	0	0	0
W-2: Chief Warrant Officer	--	2	0	2
Total	**35**	**46(4)**	**33(2)**	**114(6)**

Note: The number of reservists, in addition to station personnel, is indicated in parentheses.

2.2 Survey Materials

The data collection materials used in this study were a combination of a survey and small group discussions. These methods are described below in Sections 2.2.1 and 2.2.2.

2.2.1 Operational Focal Point (OFP) Survey

A survey was developed to capture crew impressions of the 47-Foot MLB on a number of boat operations and handling issues. These operations and handling issues, known as Operational Focal Points (OFP), were compiled with the assistance of the 47-Foot MLB test team crew at the National Motor Life Boat School in Ilwaco, WA. The survey addressed a total of 17 OFPs aimed at all facets of boat operations, maintenance, and handling. In addition, 6 specific small boat

station mission categories (search, rescue, maritime law enforcement, port safety and security, marine environmental response, and recreational boating safety) were included to provide more detailed information not available from the primary "mission" OFP rating. Crew members were asked to rate the mission OFP and then to rate each of the specific mission categories. Table 3 presents the complete list of the 17 OFPs and the 6 additional mission categories. To simplify the reporting of the results, the OFPs Heavy Weather Operations through Maintenance (In Port) are referred to as 'Capability Focal Points". The mission OFP as well as the 6 specific mission categories are referred to as "Mission Focal Points.

Table 3. List of Operational Focal Points.

OPERATIONAL FOCAL POINTS
Heavy Weather Operations
Calm Weather Operations
Surf Operations
Towing (Aft)
Towing (Alongside)
Personnel Recovery
Piloting/Navigation
Mooring
Anchoring (Own Boat)
Anchoring (Other Boat)
Firefighting (Own Boat)
Firefighting (Other Boat)
Alongside Operations
Helicopter Operations
Maintenance (Underway)
Maintenance (In Port)
Mission
• Search
• Rescue
• Maritime Law Enforcement
• Port Safety and Security
• Marine Environmental Response
• Recreational Boating Safety

The OFP survey materials were divided into three sections: background, 47-Foot MLB comparisons with an ideal MLB vessel, and 47-Foot MLB comparisons with the 44-Foot MLB.

- *Background* -- The first section collected demographic information about the crew member completing the survey (e.g., rate, rank, experience on 44- and 47-Foot MLB's, etc.).

- *Current 47-Foot MLB compared with Ideal MLB* -- The second section asked crew members to evaluate, using a 100 point scale (Appendix D), the suitability and effectiveness of the 47-Foot MLB relative to an ideal MLB vessel for each of the OFPs. Crew members were asked "how well does the 47-Foot MLB compare to the ideal MLB on each of the OFPs?" Crew members were instructed that "...100 means that the current MLB represents the ideal MLB on a particular OFP (i.e., 100%), 50 means half of the ideal (i.e., 50%), and so forth." Each crew member used his or her own perceptions of an ideal MLB to make the evaluations. This type of rating represents a direct estimation method that has elsewhere proven valuable for rapid evaluation of responses to physical and other aspects of systems (e.g., Stevens, 1975; Morrissey, Bittner & Archangli, 1990).

- *44-Foot MLB compared with Current 47-Foot MLB* -- The third section asked crew members to directly estimate the relative effectiveness and suitability of the 44-Foot and 47-Foot MLBs with regard to each of the OFPs. The response range included a central neutral point (where the 44-Foot and 47-Foot MLBs are equal) with separate ranges to the left and right of the neutral designating the relative superiority of the 44-Foot or 47-Foot MLBs with respect to a specific OFP (Appendix D). The 44-Foot v. 47-Foot MLB relative judgments used a direct estimation method that has proven valuable for rapid evaluation of responses to systems (Stevens, 1975; Morrissey et al., 1990).

The comparisons of the 47-Foot MLB against the ideal MLB provided an *absolute* assessment of suitability and effectiveness. The results from the absolute comparisons are useful for judging the potential for improving the current 47-Foot MLB design. The comparisons of the 47-Foot MLB against the 44-Foot MLB provided a *relative* assessment of the suitability and effectiveness. The results of the relative comparisons (47-Foot MLB v. 44-Foot MLB) are most important when judging suitability of the 47-Foot MLB to replace the 44-Foot MLB. Appendix D contains examples of the rating scales used in the OFP survey and additional details that explain the survey process.

2.2.2 Small Group Discussion List

The Small Group Discussion List (Appendix E) addresses "problem areas" and "wish list" items. These items were identified during preliminary small group meetings (see section 2.3.1 for a

complete discussion on the development of the small group discussion list). The discussion list organizes problems and wish list items by areas of the (e.g., chocks and bitts in the deck area). In general, problems and wish list items are unique to areas on the boat. In some cases, however, item such as HVAC and deck plates occur in several areas. Crew members were asked to evaluate each item using a 6-point scale where 0 indicated that the item was not a problem (or did not need to be added) and 5 indicated that the item was a big problem (or definitely should be added to the boat). This type of scale was used because it was easy to understand, took little time to use, and provided a quantitative measure of the importance of the items. Blank spaces were provided for crew members to add items to the list or to write detailed comments, if they chose.

2.3 Procedure

2.3.1 Refinement of Methodology

The operational suitability and effectiveness evaluation was conducted in two phases: the first (Phase I) shortly after the delivery of the boats (January and February of 1994) and the second (Phase II) several months later (May and June of 1994). Earlier evaluations of a 47-Foot MLB prototype had revealed numerous deficiencies which could compromise crew safety and performance. Because of concerns that all major deficiencies had not been identified during the prototype evaluations, as well as potential deficiencies resulting from changes to the pre-production vessels, a preliminary evaluation was scheduled to be performed shortly after the delivery of the 47-Foot MLBs. The purpose of this phase of the evaluation was to identify major deficiencies with the 47-Foot MLB that would require immediate attention before crew safety was compromised. However, due to boat delivery delays, only three stations had sufficient operational experience to participate in this Phase of the evaluation. The goals of Phase I were: 1) to detect early the deficiencies that might require immediate adjustments to ensure crew safety and meet mission needs; 2) to test measurement techniques to ensure they are reliable and sensitive; and 3) to identify deficiencies or areas of concern which may require more detailed investigation in Phase II. Analysis of the Phase I data revealed: 1) no significant deficiencies which required immediate attention; 2) the measurement techniques were reliable and sensitive to fluctuations in factors associated with suitability and effectiveness issues; and 3) potential deficiencies and areas of concern to emphasize in Phase II.

Since the measurement techniques were reliable, sensitive, and accepted by crew members, only minor adjustments were made for Phase II. One significant change in Phase II was the use of rating scales to capture small group discussion concerns. During Phase I, small group discussions were conducted to provide an informal, unstructured, venue for crew members to express concerns about the 47-Foot MLB and ideas for change. In order to stimulate discussion, crew members were provided with a blank piece of paper and asked to list items they would like to see changed on the 47-Foot MLB. They were told to 1) list changes by priority, and 2) assume that any changes they listed would be made. The latter point was made so crew members would be more likely to list all problems, not only those they thought likely to be changed. Crew members

were encouraged to focus on design-related issues necessary for safer and/or more effective accomplishment of missions (rather than logistic or other operational issues). Once an ample time period had elapsed, crew members took turns reading the contents of their lists. Free and open discussion was encouraged throughout the reading of the lists. The often-lively and revealing discussion not only provided detailed aspects of list items but also produced solutions to deficiencies.

Although the small group discussions produced valuable information, the informal nature of the data collection did not allow for easy quantification of the data. Also, it became evident that the list of items was very similar between groups. For these reasons, items specific to given areas on the boat were compiled into a list and a rating scale was generated (2.2.2). Blank lines were provided at the end of each section for crew members to supplement the list if necessary. By using this list the small group discussion was simplified by not having crew members generate their own lists, and allowing for quantification of verbal responses.

The small group discussion list was the only significant difference between Phase I and Phase II methodologies. The following sections describe the methodology used in both phases of data collection.

2.3.2 Crew Briefing

Researchers met with crew members to discuss the purpose and objectives of the study and to answer questions prior to data collection. The researchers informed the crew members of the purpose of the survey, told them how the survey was composed, and provided general directions on how to complete each section of the survey. Typically, crew members participated during their regular work days as part of their assigned daily duties. Crew members were informed that their identity and responses would be confidential and anonymous. Crew members' responses were assigned code numbers to ensure confidentiality and anonymity.

2.3.3 47-Foot MLB Absolute and Relative Comparisons

The 47-Foot MLB v. ideal MLB comparisons were completed first and the 47-Foot MLB v. 44-Foot MLB comparisons were completed second. Crew members were instructed to rate each of the OFPs and provide an estimate of the number of hours of experience performing each OFP on both the 47-Foot and 44-Foot MLB. Depending on their ratings of the main OFPs, crew members would be asked to provide more detailed information. If crew members rated the 47-Foot MLB less than 75% of the ideal MLB, they were asked to complete detailed questions related to the specific OFPs. They were also requested to describe in writing 1) the nature of, or the "deficiency" leading to the rating, and/or 2) an engineering change to improve the 47-Foot MLB's design, if they had any ideas for improvements. The cutoff of 75% was chosen to focus on the most significant problem areas and to reduce the amount of time needed to complete the survey.

A similar procedure was followed in the survey section that directly compared the 44-Foot MLB with the 47-Foot MLB. However, detailed responses were only requested when the 44-Foot MLB was rated 40% or higher than the 47-Foot MLB (Appendix D

2.3.4 Small Group Discussions

Group composition varied but typically consisted of 4 to 7 crew members of similar rank. At the beginning of the discussion, the group was reminded that the purpose of the visit was to collect crew comments and recommendations to improve the design of the current 47-Foot MLB. The group was thanked for participating in the OFP survey but noted that the survey process may not have captured all of their concerns and ideas. For that reason, they were given an opportunity to present information which, in their opinion, should be considered during the OT&E. In order to stimulate discussion, the "problem area" and "wish" list developed in Phase I were distributed to each of the small group participants.

The group was asked to rate each item on the list using the 0 to 5 scale provided. They also were asked to add any additional items that they felt needed attention. Typically, crew members were asked to rate one or two sections of the list and followed by discussions of the ratings. Only the higher rated items (ratings of 3, 4, and 5) were discussed in order to focus on what crew members perceived to be the most important issues and to reduce data collection time. Crew members were asked to explain the deficiency(ies), and whether they had any solutions for correcting the deficiency(ies). The same process was repeated until the last item on the list was completed.

3.0 RESULTS

Given the limitations with Phase I data collection -- limited experience of crew members and untested measurement techniques -- the Phase I data are deemed preliminary and will not be discussed in much detail. The following discussion will focus on the results from Phase II of the evaluation. Survey results are presented in this section. These results are organized in three sections:

- Comparisons for the current 47-Foot MLB with the ideal MLB (3.1)
- Comparisons for the 47-Foot and 44-Foot MLBs (3.2), and
- Small group discussion results (3.3)

As described earlier (2.2.1), the OFP survey comparison results will be presented in two categories. The first category includes the overall "Mission" OFP and the 6 specific mission categories (Mission Focal Points). The second category contains the remaining OFPs (Capability Focal Points). See Table 1 for the complete list of OFPs and mission categories

Summary data and statistical analyses were calculated for the OFPs, both across and within stations, using a standard statistical software package (SPSS/PC+). Analyses were based on repeated-measures analysis of variance (RANOVAs) conducted on OFP means by station and by crew member (occupational) rate (see Bramwell, Bittner, & Morrissey, 1992, for a discussion of RANOVA). Results are considered in terms of the main effects of:

- Operational Focal Points, and
- Station differences

3.1 Current 47-Foot MLB Compared with Ideal MLB

This section describes the results of the 47-Foot MLB compared with the ideal MLB. For this data, values of 100 indicate that the current 47-Foot MLB is ideal; while, values less than 100 indicate that the current 47-Foot MLB is proportionately less than ideal (e.g., a value of 50 means that it is half of ideal). Appendix F contains summaries of the data used in this section.

3.1.1 Mission Focal Points

Overall ratings for the mission-related OFPs (2.2.1) across stations and crew member ratings are illustrated in figure 1. As can be seen, the current 47-Foot MLB is considered to be relatively well-suited for its missions. Indeed, all mission ratings are greater than or equal to 80 percent. The mission ratings, though appearing relatively flat, differ statistically ($p < .0002$). This is largely because the overall Mission OFP rating, as well as the specific mission ratings for Search and Rescue tend to be larger than those for the other specific mission ratings. Of note, the overall Mission OFP rating appears to be most heavily influenced by the Search ratings and Rescue ratings (the remaining specific mission ratings contribute less to the overall Mission OFP rating). This is not an unusual pattern for overall judgments where some components constitute the majority of global ratings and other components contribute to the overall judgment to a much lesser extent.

The patterns of mission ratings at each of the individual stations can be seen to be generally consistent with the pattern across stations (see figures 1-1 to 1-5). However, the average mission ratings at the stations differ significantly ($p < .025$). Station Oregon Inlet's mission ratings, for example, tended to be lower than other stations; while, Cape May's ratings were highest (cf., figures 1-1 and 1-5). These tendencies were not surprising due to the different environmental challenges at the two stations. Conditions at Station Oregon Inlet, in addition to narrow and shallow access channels, frequently include complex, broken surf and continuous moderate to high winds. Consequently, 47-Foot MLB sail effects and initial steering/throttle problems, together with a deeper draft than the 44-Foot MLB, present particular challenges. Cape May, in contrast, can be characterized by its relatively wide and deep access and relatively minimal surf conditions.

Interactions of stations with specific mission OFPs may also appear to be present in the individual station results. These apparent interactions are reflected in the figures 1-1 through 1-5 by some stations appearing to have widely different mean ratings for some of the OFP means than other stations. For example, Station Gloucester has relatively lower evaluations of Maritime Law Enforcement than the other stations. This might be reasonably attributed to difficulties associated with boarding fishing boats from 47-Foot MLBs when nets are in the water (in contrast with boarding from the lower-profile 44-Foot MLBs). However attractive these kinds of interpretations appear, they cannot be justified on a statistical basis as the station-by-focal-point interactions were not statistically significant ($p > .11$). Thus, only small average differences distinguished the station ratings of the OFPs, although they may have appeared to be large.

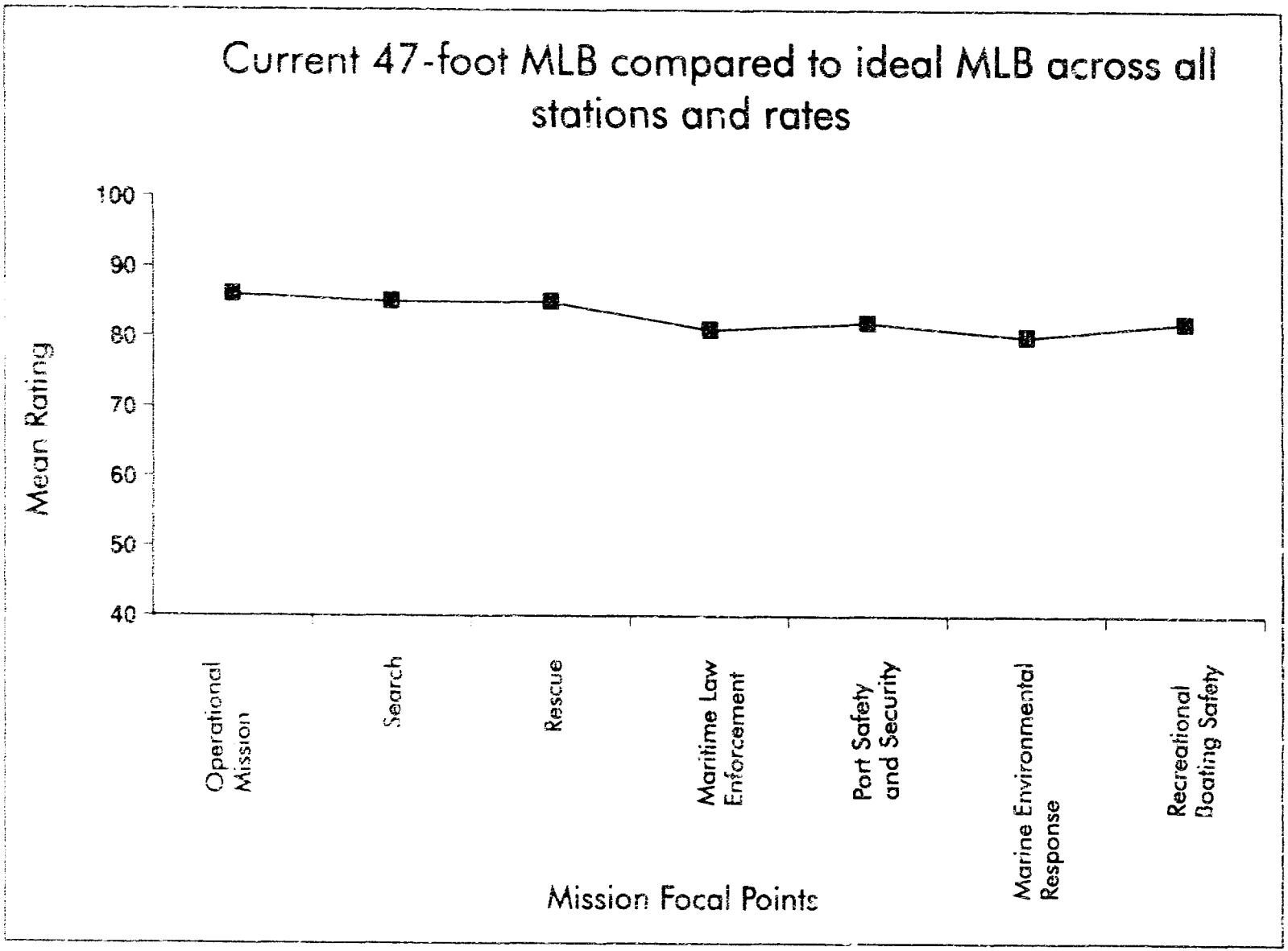


Figure 1. Mission focal points for the 47-Foot MLB compared with the ideal MLB across all stations and rates.

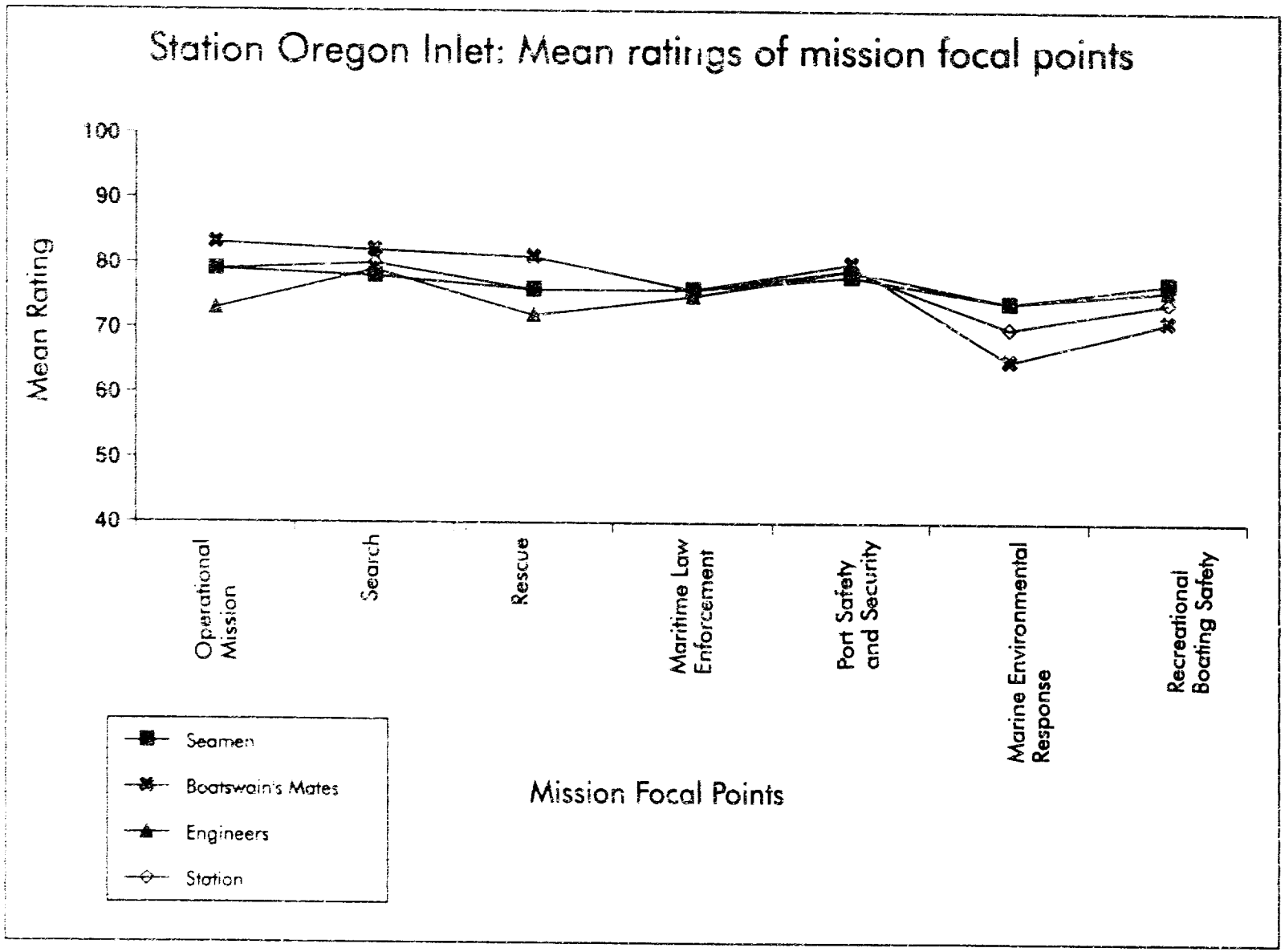


Figure 1-1. Station Oregon Inlet: 47-Foot MLB compared with the ideal MLB mean ratings of mission focal points.

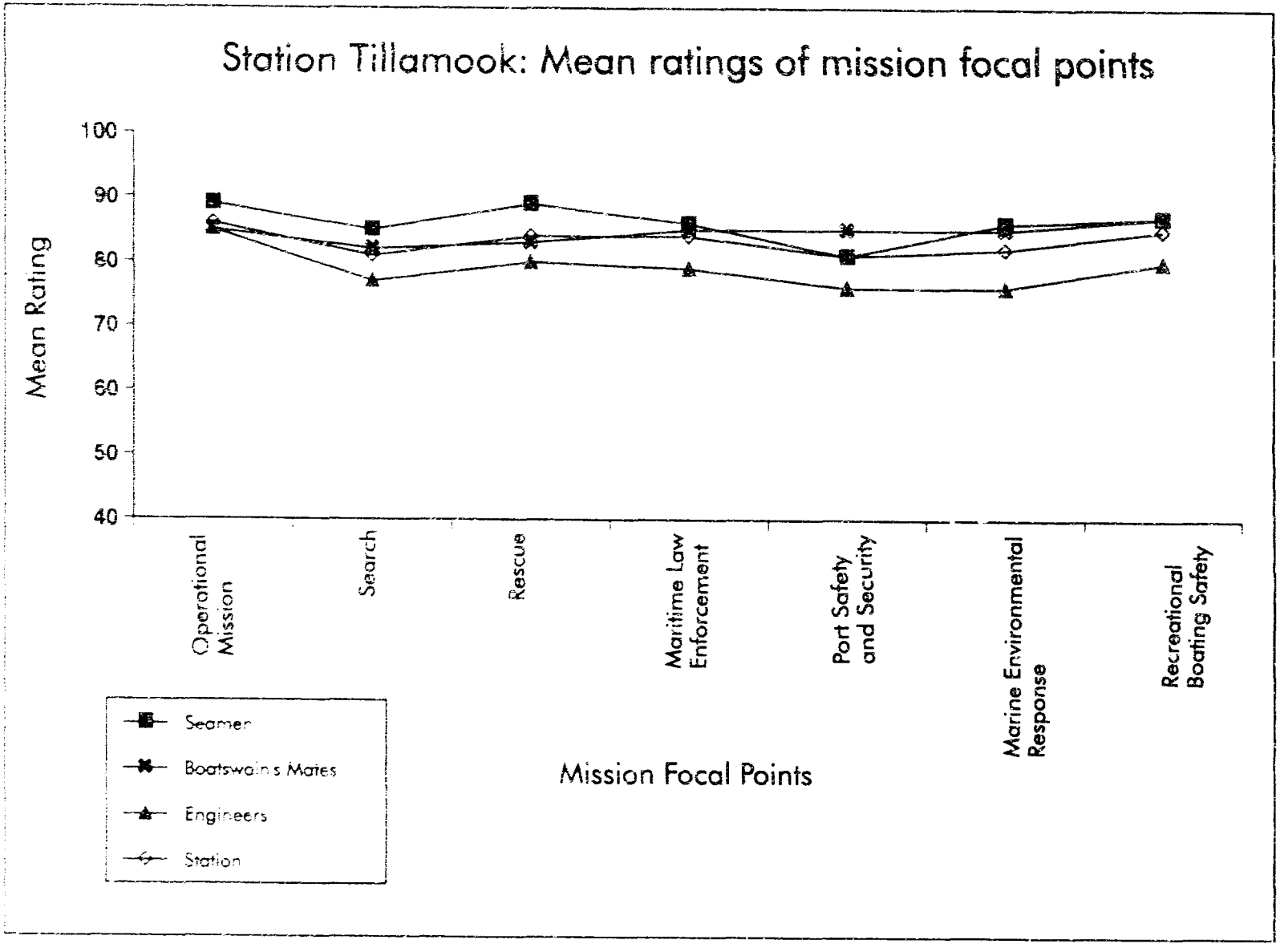


Figure 1-2. Station Tillamook: 47-Foot MLB compared with the ideal MLB mean ratings of mission focal points.

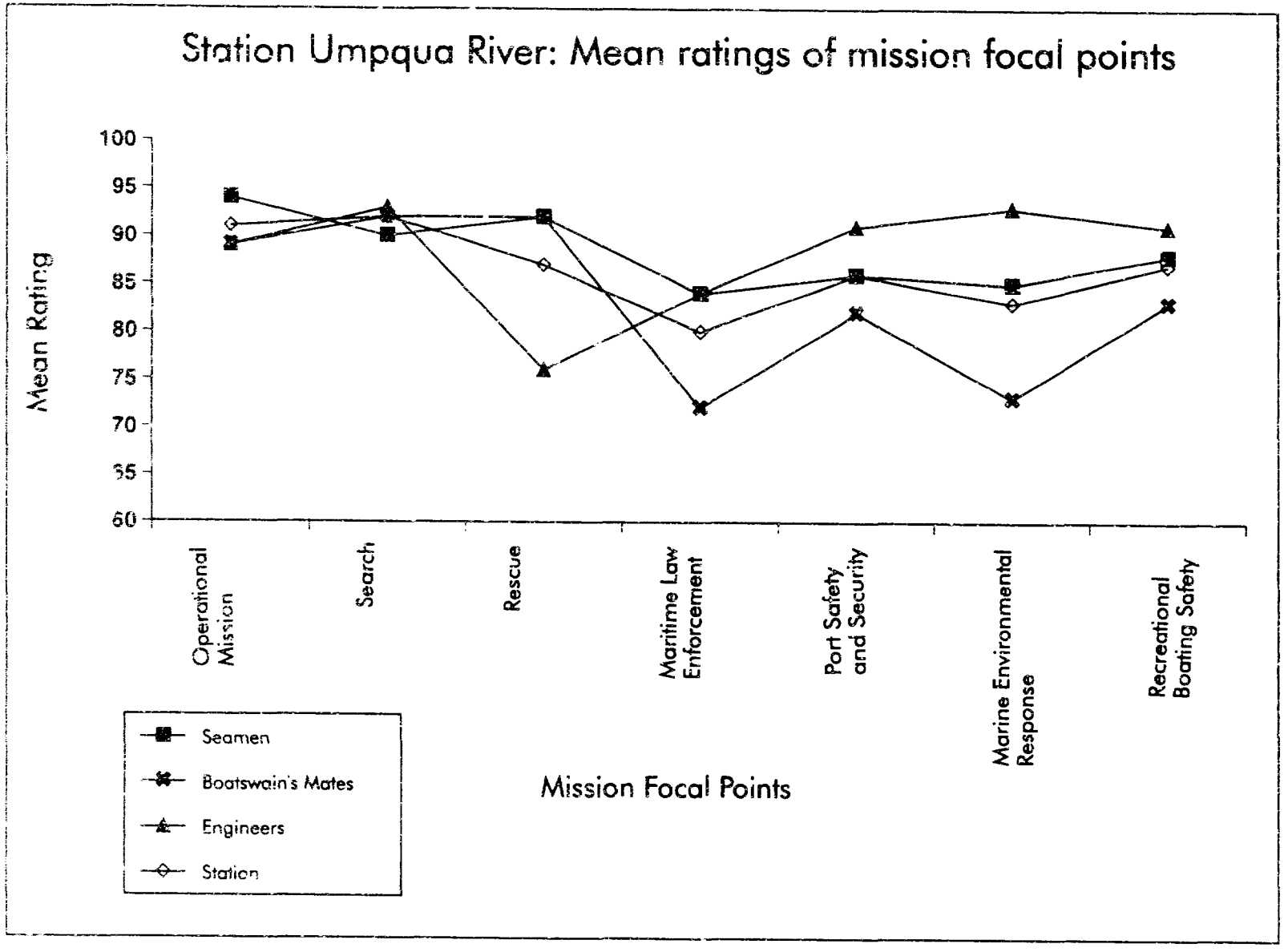


Figure 1-3. Station Umpqua River: 47-Foot MLB compared with the ideal MLB mean ratings of mission focal points.

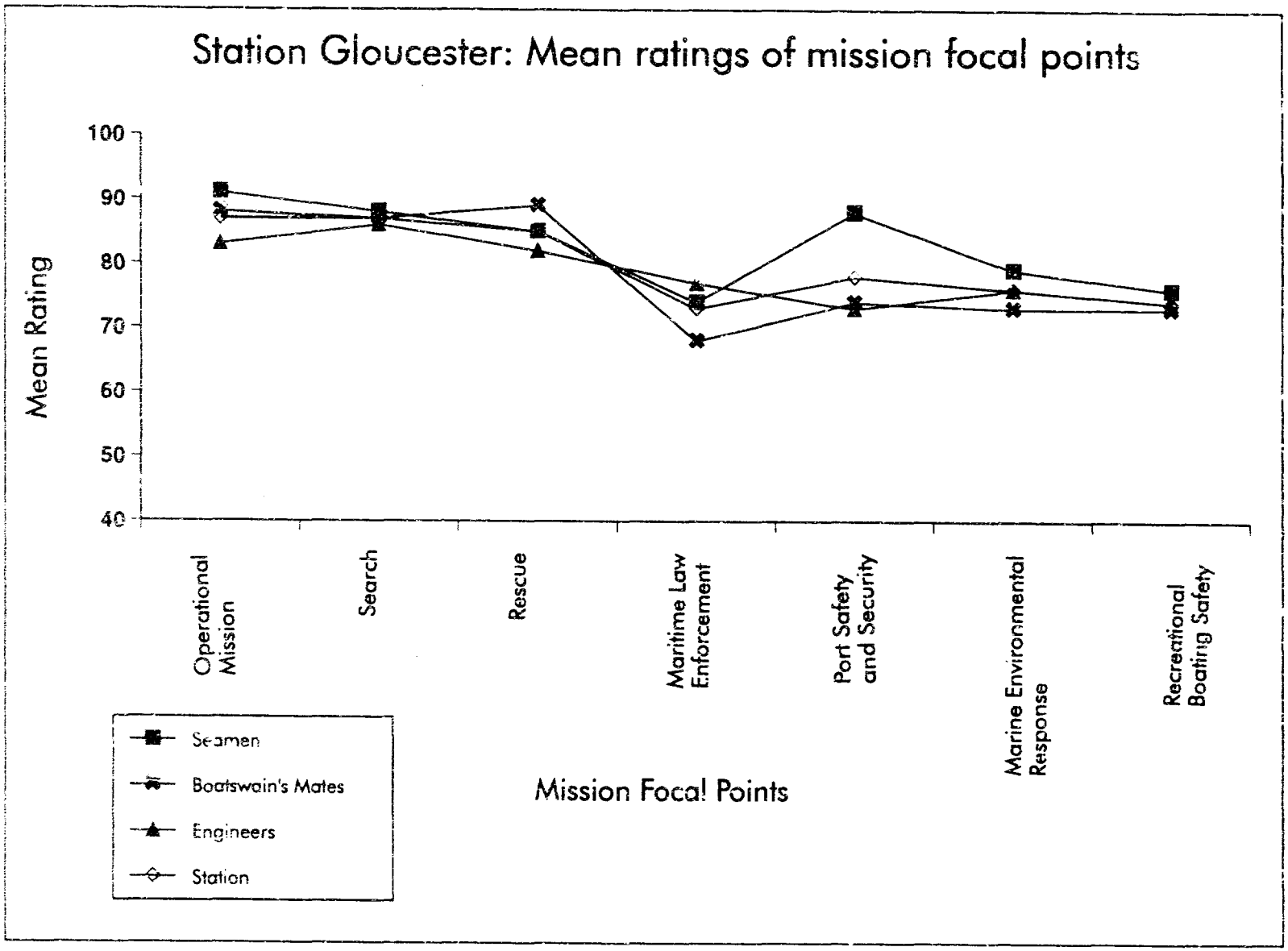


Figure 1-4. Station Gloucester: 47-Foot MLB compared with the ideal MLB mean ratings of mission focal points.

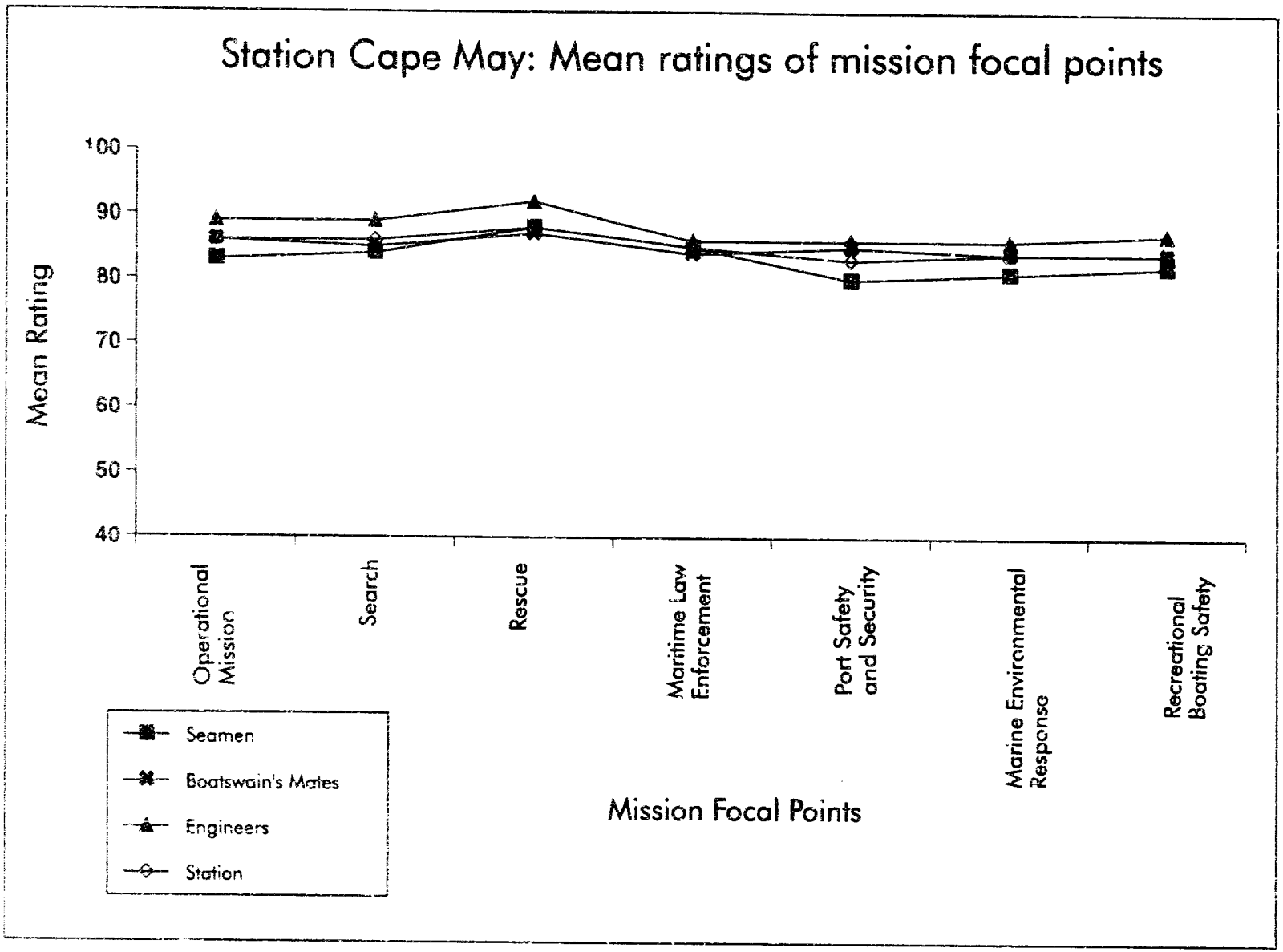


Figure 1-5. Station Cape May: 47-Foot MLB compared with the ideal MLB mean ratings of mission focal points.

3.1.2 Capability Focal Points

Figure 2 shows a general consistency for all capability-related OFPs (2.2.1) to be rated high. More specifically, most of the OFPs have mean ratings greater than or equal to 80 percent of the ideal. This indicates that the vessel is generally perceived as being very satisfactory, but there is still room for improvement for specific points. However, as could be predicted from the figure, there are significant variations in the capability focal point ratings ($p < .0002$). Firefighting (Own Boat) and Firefighting (Other Boat) are the most striking examples of operations in which the boat is rated as less than ideal. The relatively high capability ratings across stations are consistent with and support the mission ratings described earlier

Figures 2-1 through 2-5 present the results for the capability-related focal points by station and rate. Generally, these individual station results are consistent with the results across stations (figure 2). However, as with the earlier mission results, stations significantly differed in their mean values ($p < .02$). Station Oregon Inlet, for example, continued to rate the capability OFPs lower than the other stations (likely for the reasons given earlier). Also consistent with earlier station results, there appear to be indications of individual station interactions with specific OFPs (reflected by differences in mean ratings for some of the OFPs for some of the stations). For example, Stations Oregon Inlet and Tillamook had relatively high firefighting ratings, while Stations Gloucester, Cape May, and Umpqua River had relatively low firefighting ratings. However, this and other station-by-OFP interactions were not supported by the statistical analysis ($p > .1$).

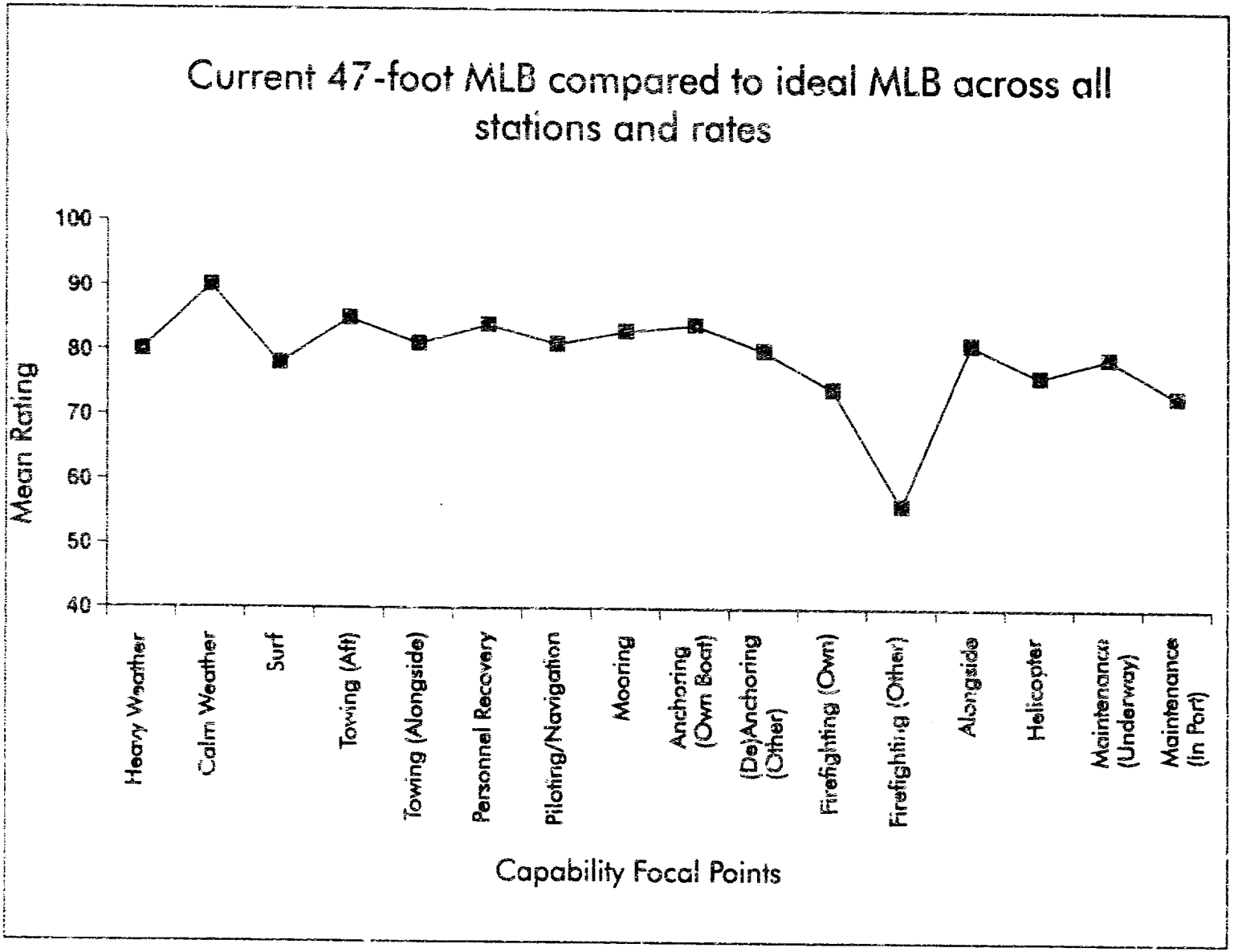


Figure 2. Capability focal points for the 47-Foot MLB compared with the ideal MLB across all stations and rates.

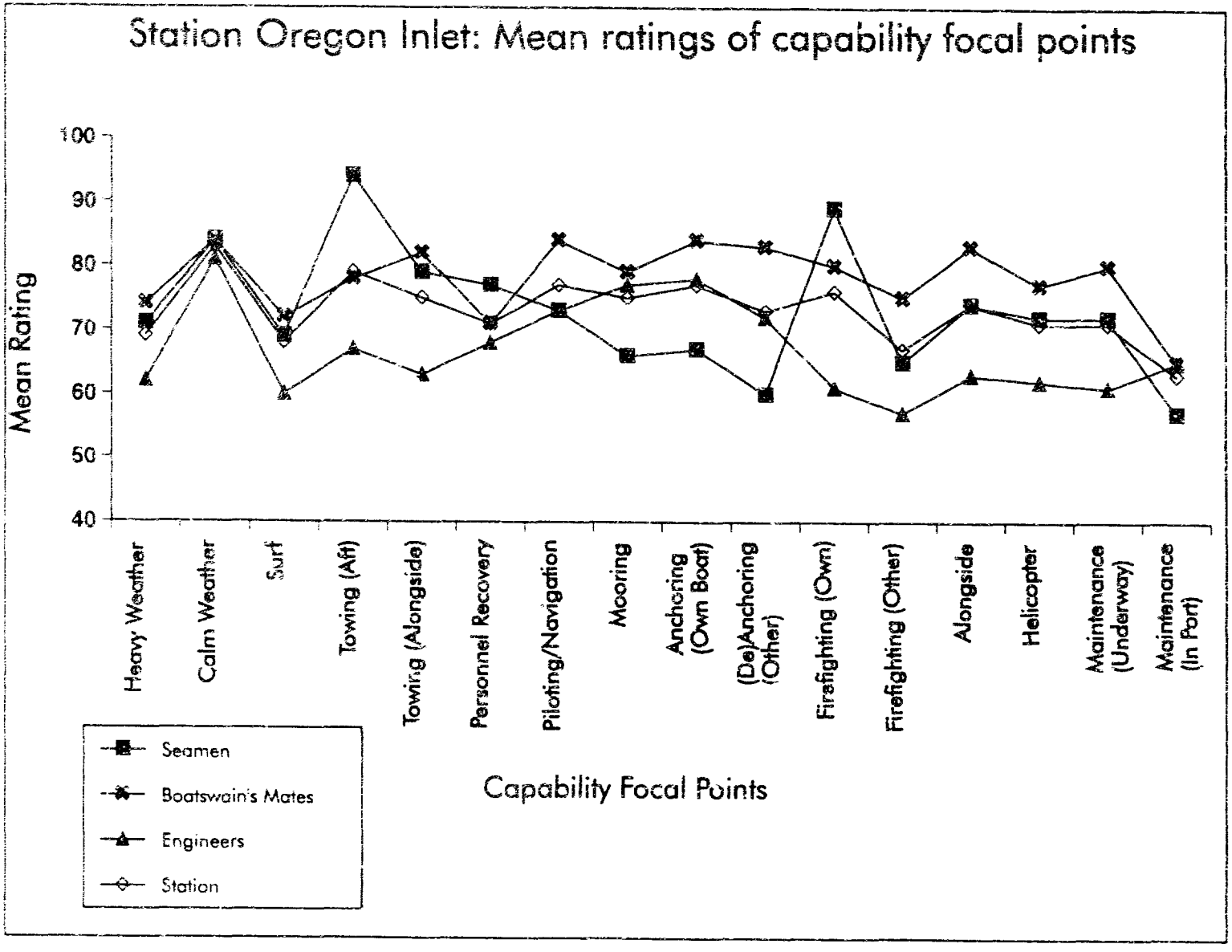


Figure 2-1. Station Oregon Inlet: 47-Foot MLB compared with the ideal MLB mean ratings of capability focal points.

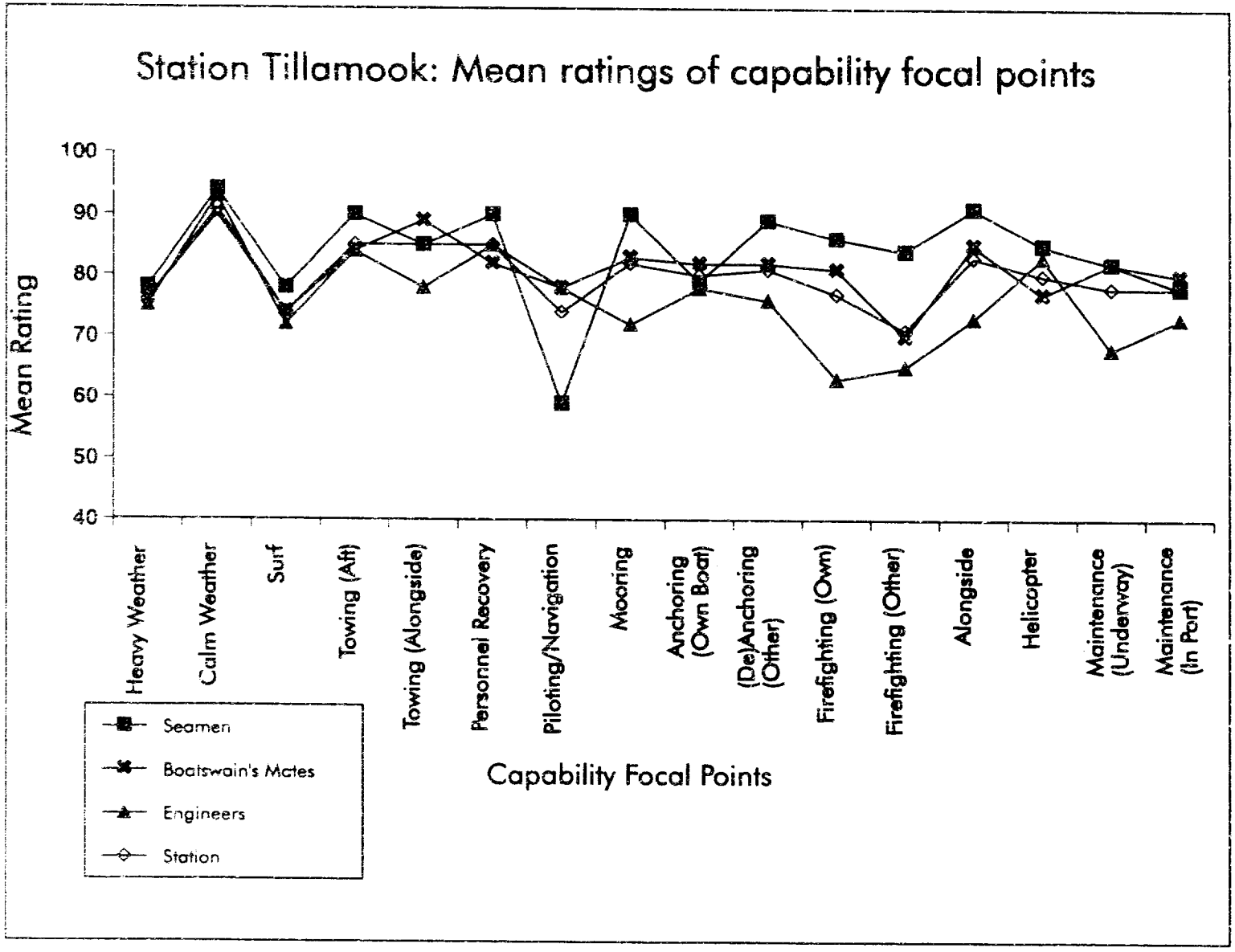


Figure 2-2. Station Tillamook: 47-Foot MLB compared with the ideal MLB mean ratings of capability focal points.

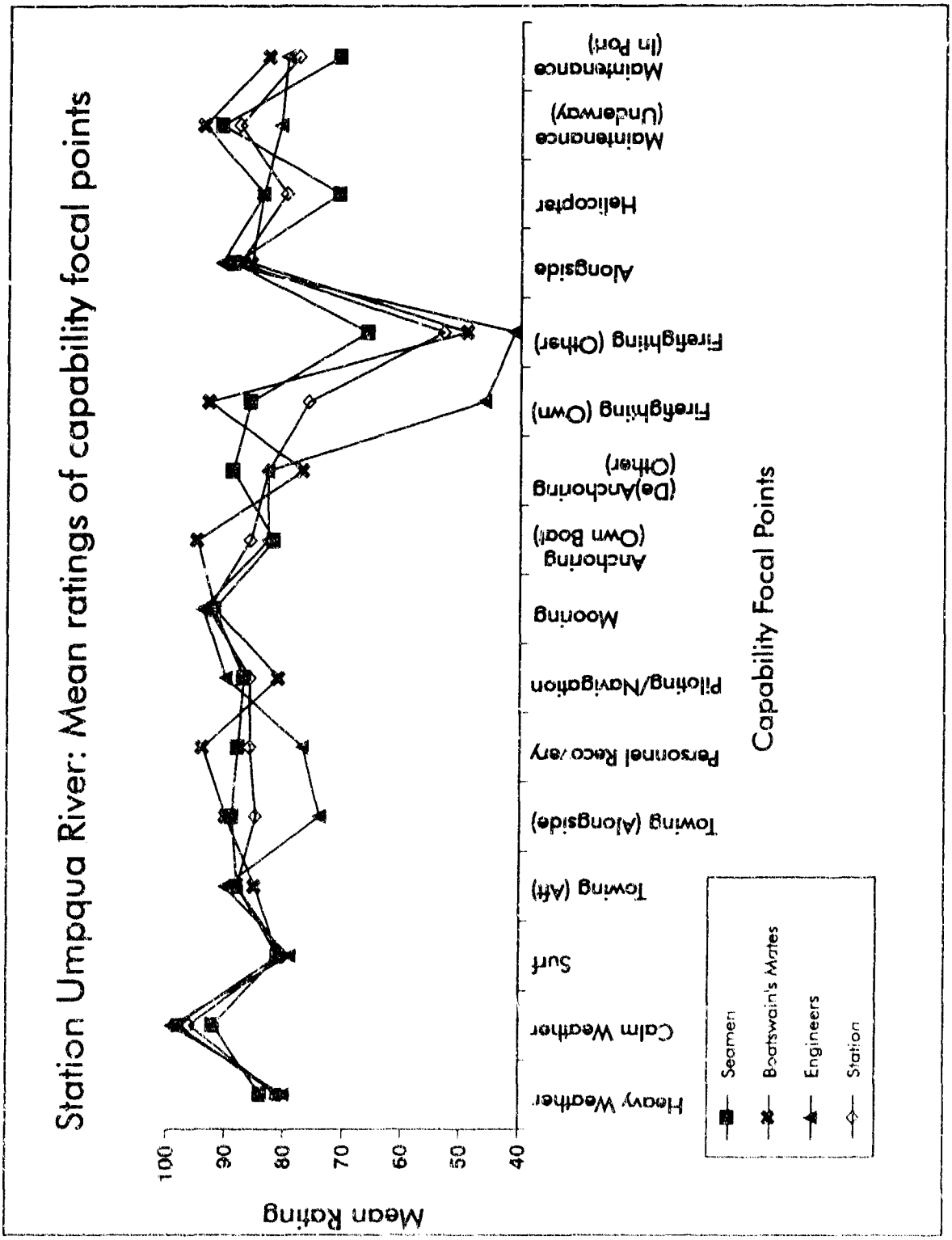


Figure 2-3. Station Umpqua River: 47-Foot MLB compared with the ideal MLB mean ratings of capability focal points.

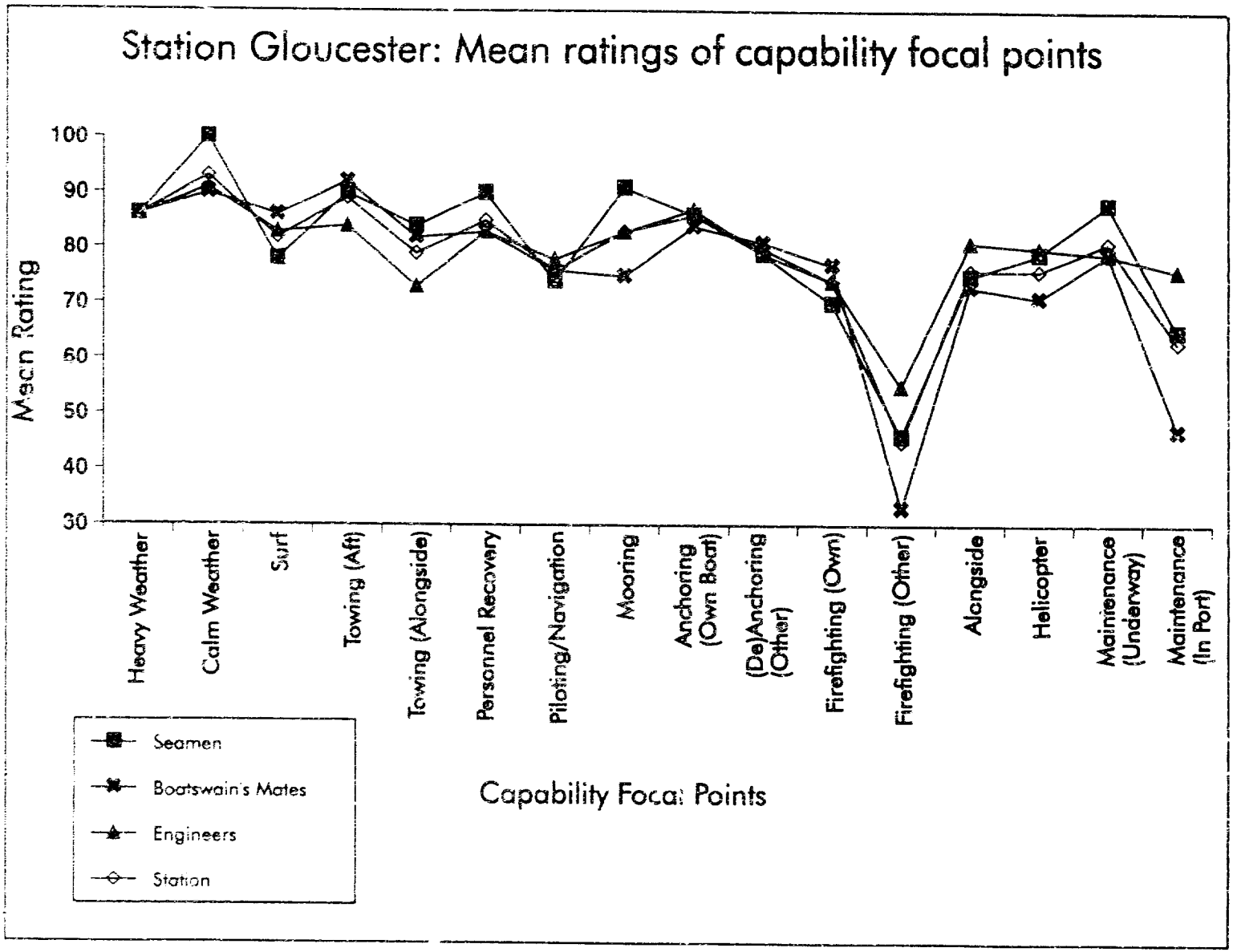


Figure 2-4. Station Gloucester: 47-Foot MLB compared with the ideal MLB mean ratings of capability focal points.

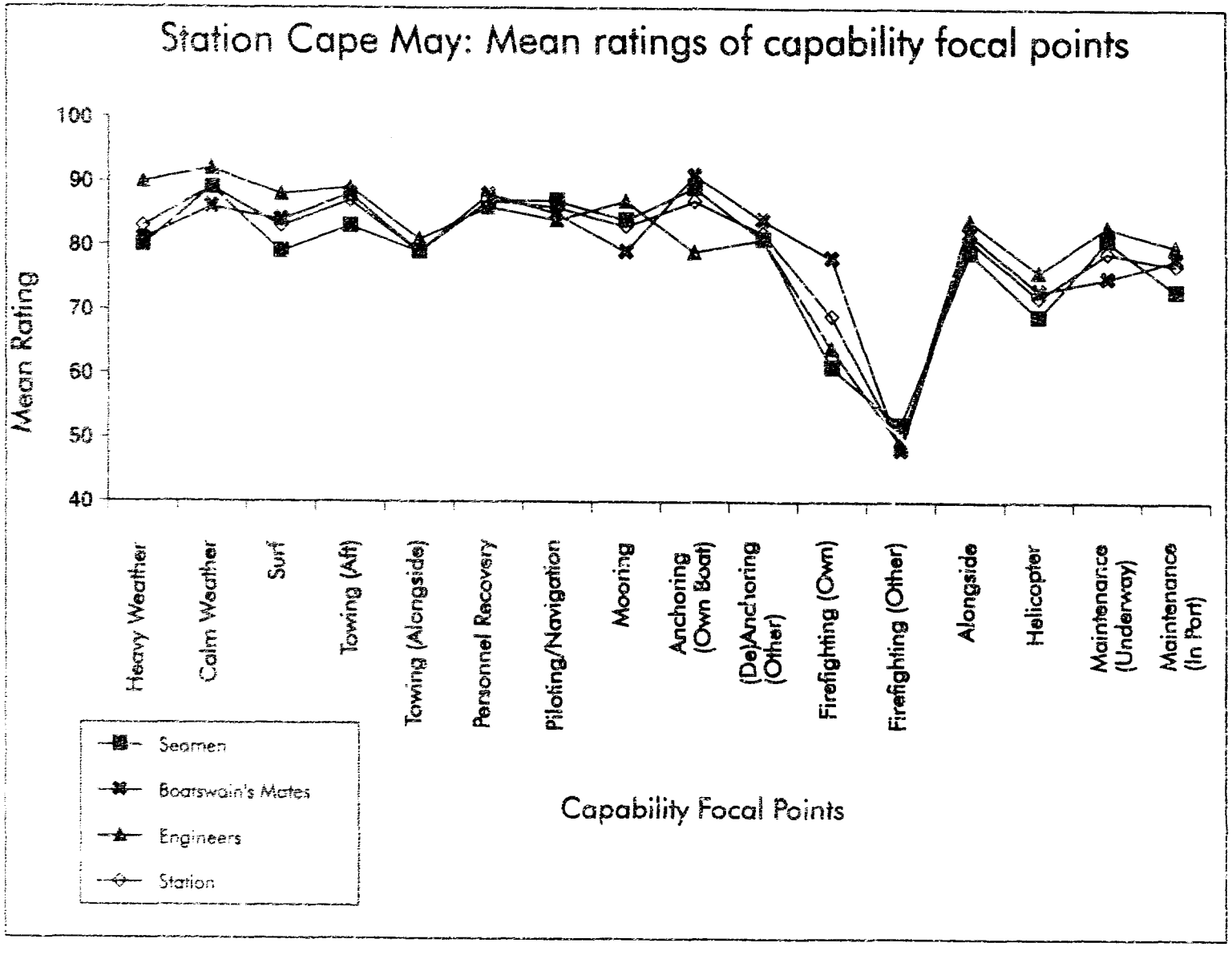


Figure 2-5. Station Cape May: 47-Foot MLB compared with the ideal MLB mean ratings of capability focal points.

3.2 47-Foot MLB Compared with 44-Foot MLB

The data reported in this section were converted from the original scale (2.2.1) to a 0.5 to 2.0 scale that directly reflected the relative advantages of the 47-Foot and the 44-Foot MLBs. The 47-Foot MLB and 44-Foot MLB relative comparison was limited to the effective 0.5 to 2.0 range based both upon early station results suggesting this represented adequate coverage, and the practical need to limit the numbers of rating categories. In the revised scale, 0.5 indicates that the 47-Foot MLB has half the capability of the 44-Foot MLB, 1.0 that the 47-Foot MLB and the 44-Foot MLB are equal, and 2.0 indicates that the 47-Foot MLB has twice the capability of the 44-Foot MLB. Appendix G contains summary data used in this section.

3.2.1 Mission Focal Points

Figure 3 illustrates the mission capabilities of the 47-Foot MLB relative to the 44-Foot MLB. Examining this figure, it is apparent that the 47-Foot MLB was rated higher than the 44-Foot MLB on all of the mission categories. Indeed, the relative effectiveness was a factor of 1.4 or greater across the various missions. The 47-Foot MLB and 44-Foot MLB relative mission ratings largely parallel the 47-Foot MLB and ideal MLB results seen earlier ($r = .93$, $p < .003$). Hence, the overall Mission OFP rating again appears to be most heavily influenced by the Search ratings and the Rescue ratings (the remaining specific mission ratings contribute less to the overall mission OFP rating). This again is not an unusual overall judgment pattern where some components constitute the majority of global ratings and other components contribute to the overall judgment to a much lesser extent.

The patterns of mission ratings (for the 47-Foot MLB relative to the 44-Foot MLB) at each of the individual stations can be seen to be generally consistent with the overall pattern across stations (see figures 3-1 to 3-5). However, in keeping with earlier ideal comparison results, the averaged mission ratings at the stations differed significantly ($p < .025$). Station Oregon Inlet's mission ratings again tended to be lower than other stations (cf., figures 3-1 and figures 3-2 to 3-5) a result not surprising due to the narrow and shallow access channels and moderate to high winds that give less advantage to the deeper-draft and higher-profile of 47-Foot MLB. The 47-Foot MLB nevertheless was systematically rated relatively more capable than the 44-Foot MLB even at the station with arguably most challenging environmental conditions (Station Oregon Inlet).

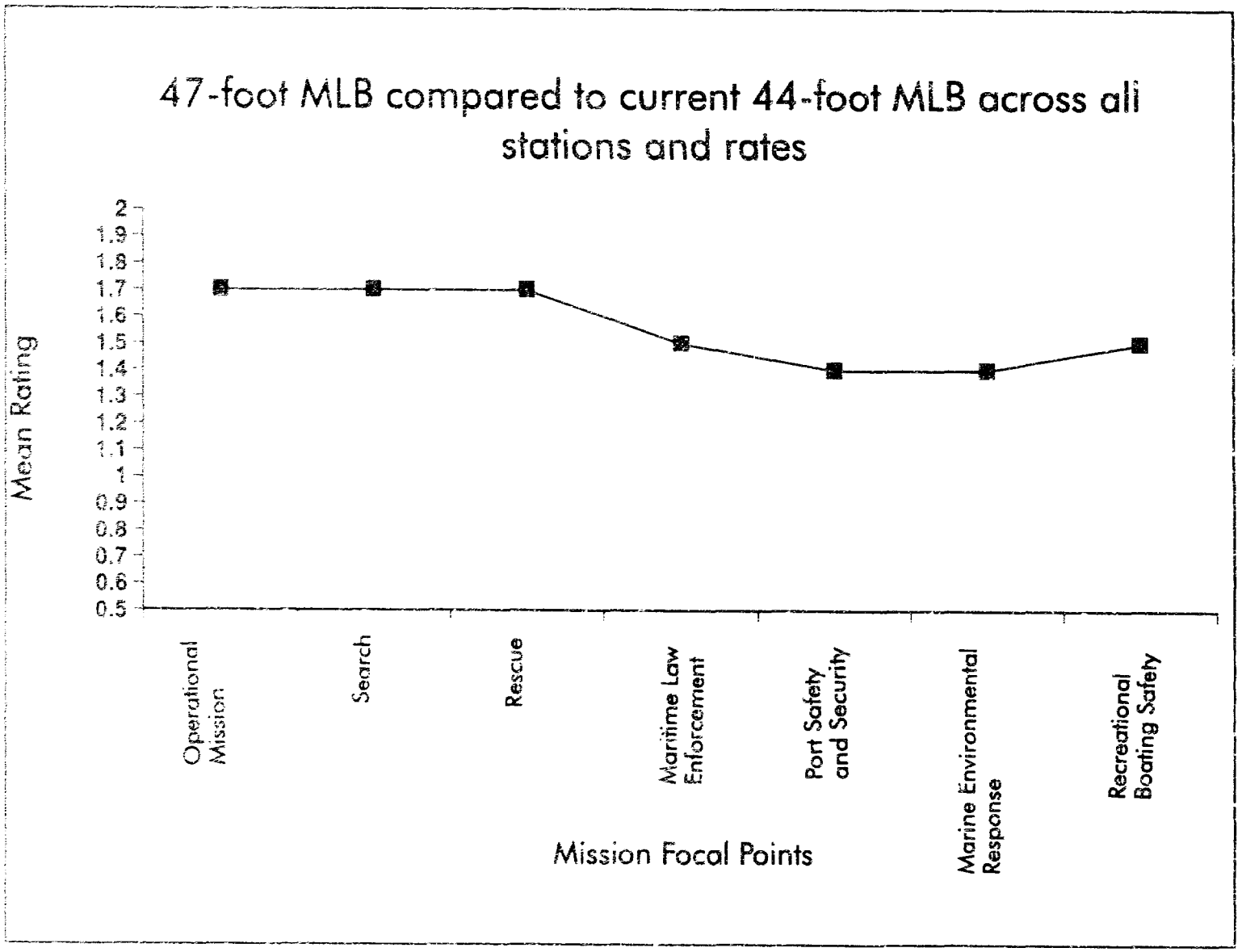


Figure 3. Mission focal points for the 47-Foot MLB compared with the 44-Foot MLB across all stations and rates.

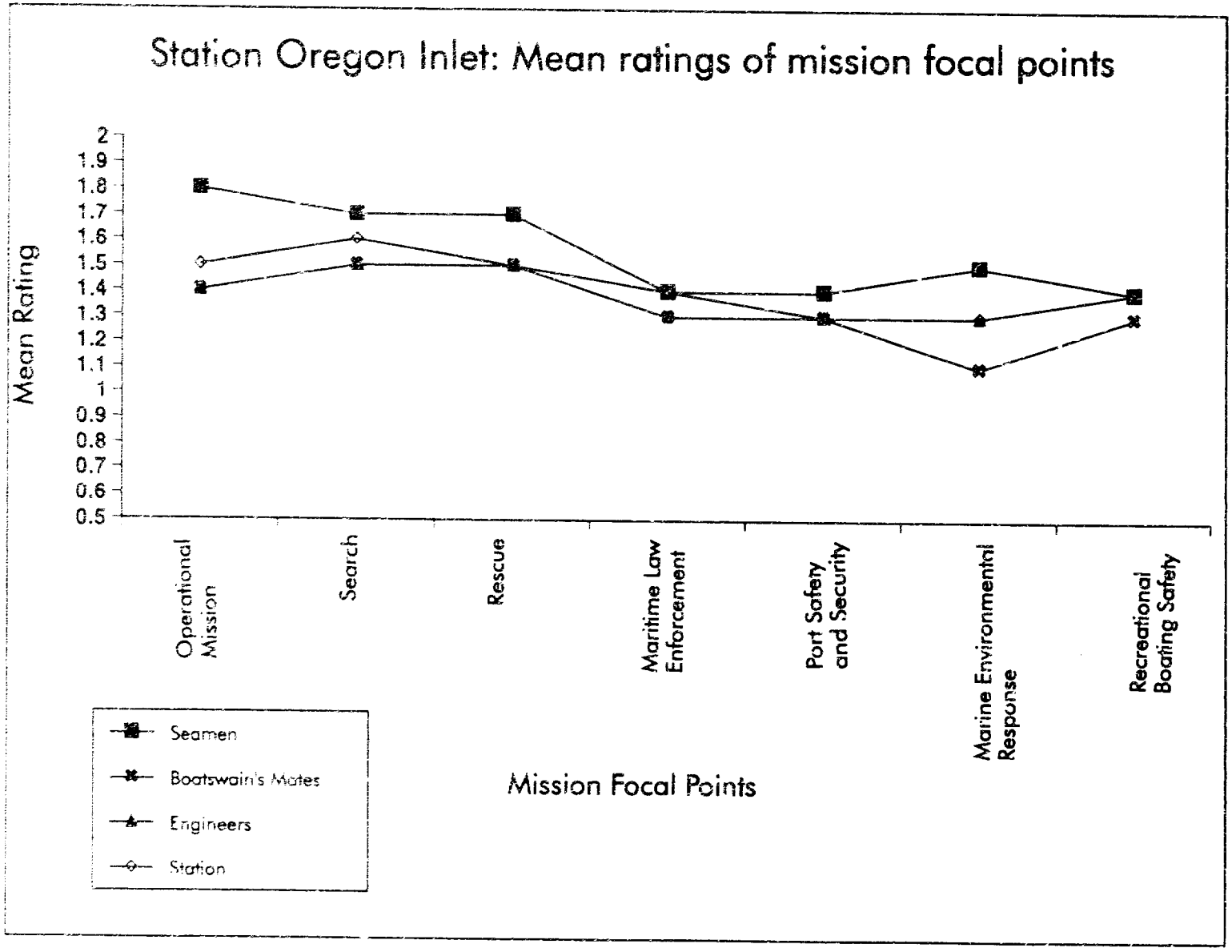


Figure 3-1. Station Oregon Inlet: 47-Foot MLB compared with the 44-Foot MLB mean ratings of mission focal points.

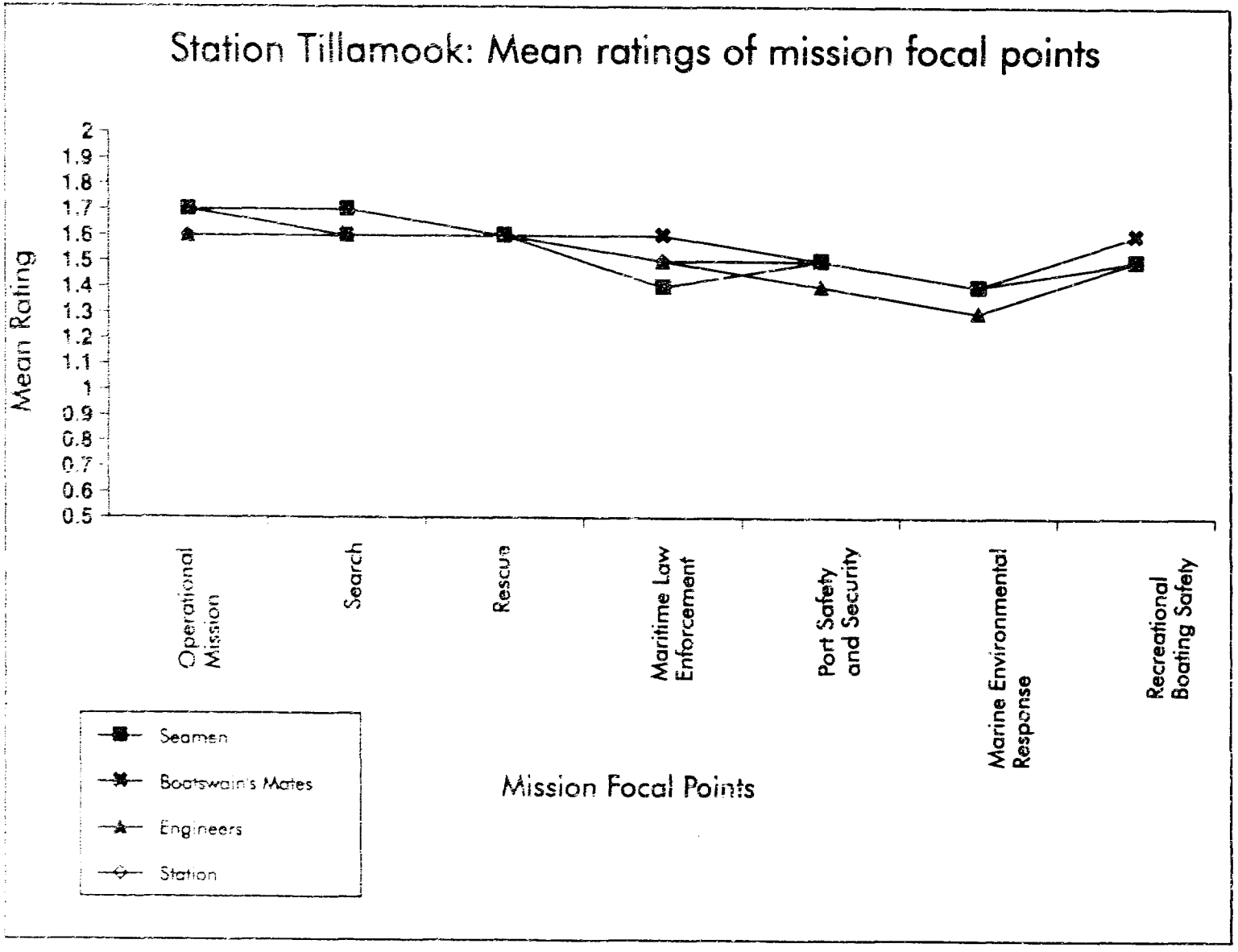


Figure 3-2. Station Tillamook: 47-Foot MLB compared with the 44-Foot MLB mean ratings of mission focal points.

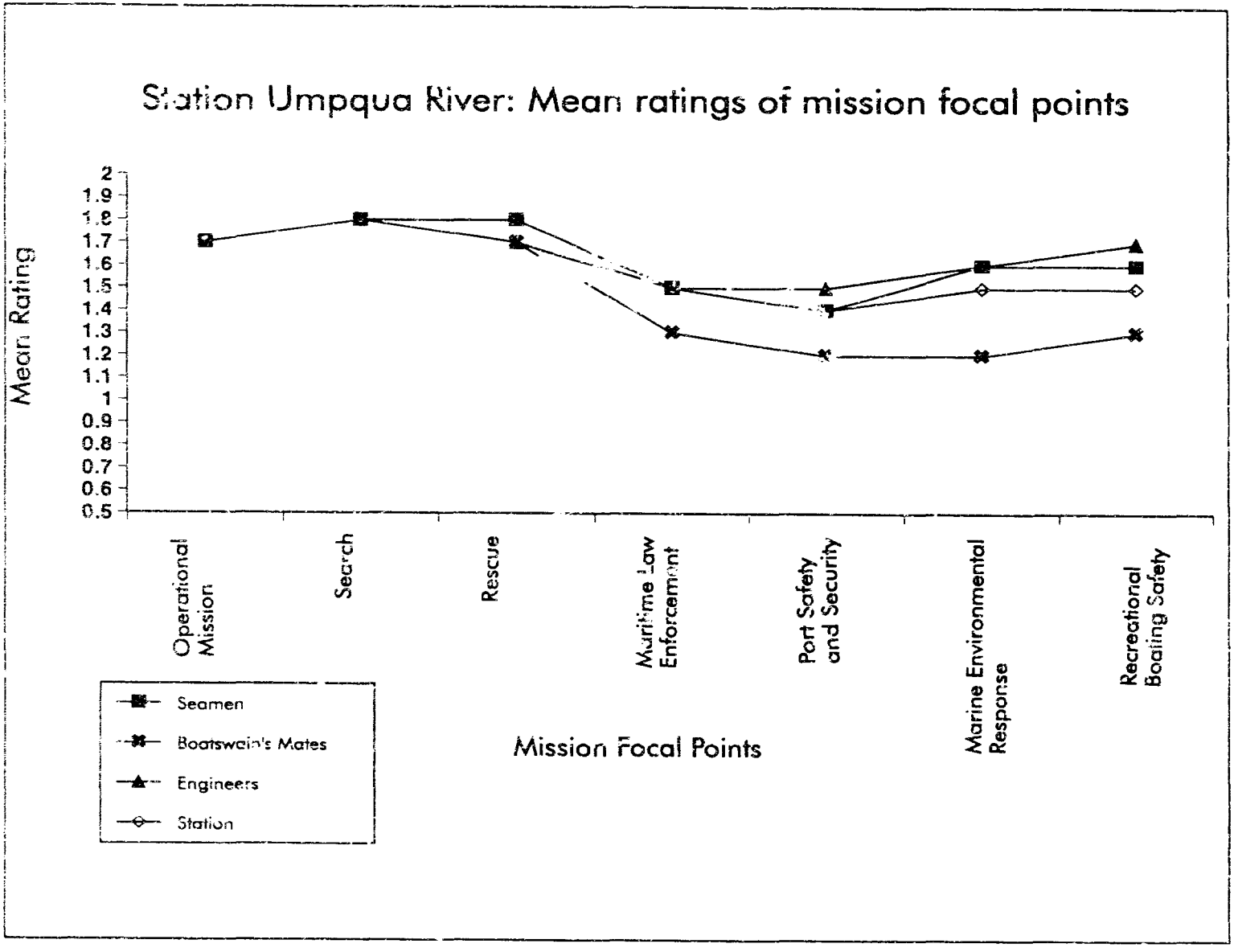


Figure 3-3. Station Umpqua River: 47-Foot MLB compared with the 44-Foot MLB mean ratings of mission focal points.

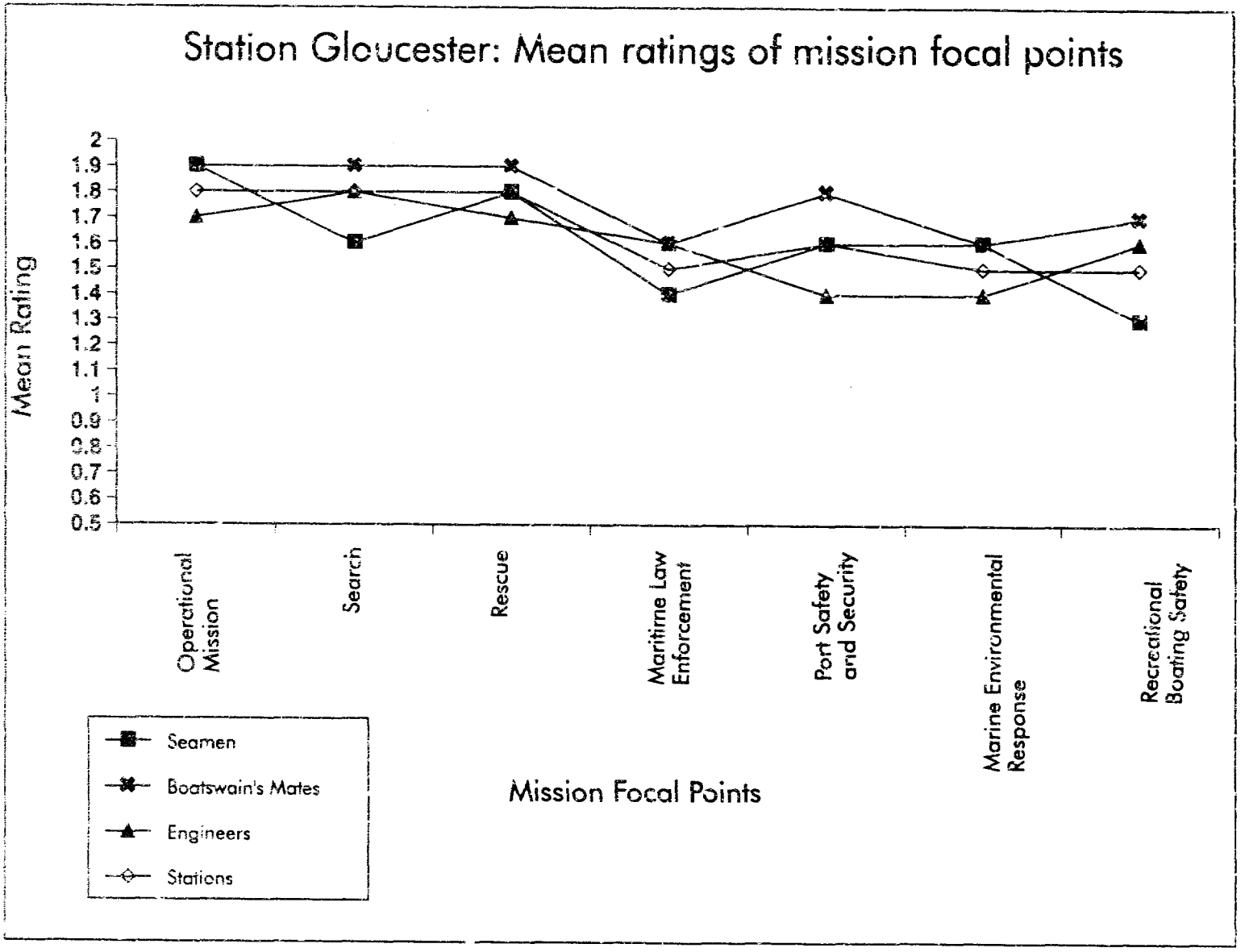


Figure 3-4. Station Gloucester: 47-Foot MLB compared with the 44-Foot MLB mean ratings of mission focal points.

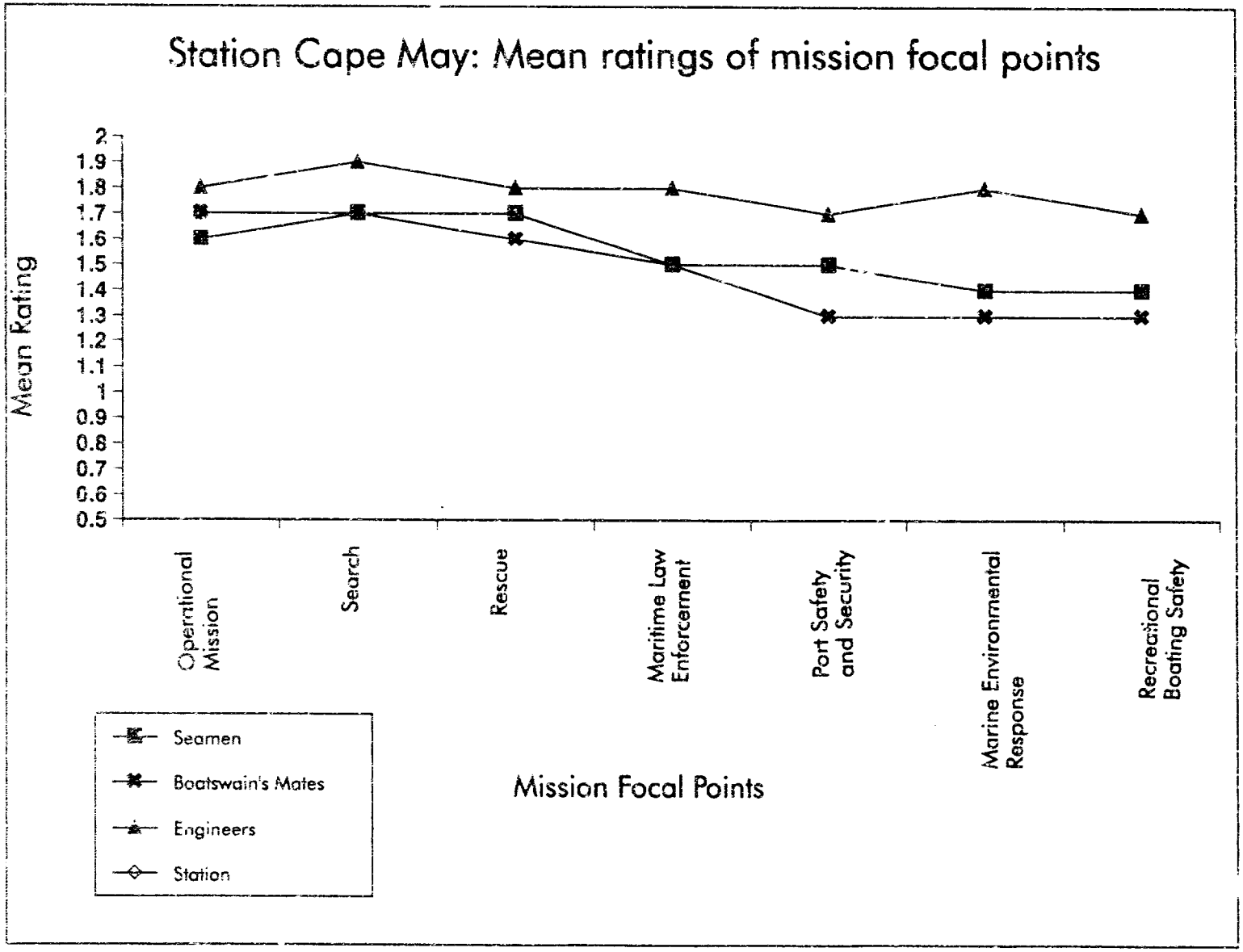


Figure 3-5. Station Cape May: 47-Foot MLB compared with the 44-Foot MLB mean ratings of mission focal points.

3.2.2 Capability Focal Points

Figure 4 illustrates the capability OFP ratings of the 47-Foot MLB relative to the 44-Foot MLB. Here, as in the previous subsection, the 47-Foot MLB and 44-Foot MLB results are very comparable to the earlier ideal results ($r = .86$, $p<10^{-4}$). For discussion purposes, a 1.3 cutoff was used to focus on OFPs where the 47-Foot MLB could be improved. The 47-Foot MLB was considered weakest in comparison to the 44-Foot MLB for the two Firefighting OFPs, with Firefighting (Other) rated inferior, 0.9. Mooring, (De)Anchoring, Helicopter Operations, and the two Maintenance OFPs also equal to 1.3 (albeit the 47-Foot MLB still was higher rated than the 44-Foot MLB). These results point out that the 47-Foot MLB was systematically viewed across stations as relatively more capable (>1.0) than the 44-Foot MLB, except with regard to Firefighting (Other Boat).

The patterns of capability-related OFP ratings at each of the individual stations can be seen to be generally consistent with the overall pattern across stations (see figures 4-1 to 4-5). However, in keeping with earlier ideal comparison results, the relative ratings at the stations differed significantly. (p <.005). Not surprisingly (because of the environmental challenges noted earlier), Station Oregon Inlet's capability OFP ratings again tended to be lower than other stations (cf., figures 4-1 and figures 4-2 to 4-5). There were also some suggestions of OFP differences that did not follow the overall station trends. With regard to Firefighting (Own and Other [boat]) Station Tillamook saw the 47-Foot MLB as marginally more capable than the 44-Foot MLB. This contrasted with the other stations which generally made the Other [boat] Firefighting ratings lower than 1.0 (and often the Own [boat] firefighting ratings as well). This difference in results could be attributed to Tillamook's tendency to accept a policy that the 47-Foot MLB is "...not to fight fires, rather to extract persons from burning vessels." When the policy is accepted, the 47-Foot MLB's greater speed gives it some advantage for getting on scene and extracting persons from a burning ship; whereas, if this policy is questioned, then this greater speed does not compensate for a lack of suitable equipment. These differences aside, it is clear that all stations are consistent in seeing the 47-Foot MLB as currently more capable than the 44-Foot MLB. However, stations also see significant areas for enhancing the current 47-Foot MLB capability as seen earlier (3.1) and as will be seen in the next section (3.3).

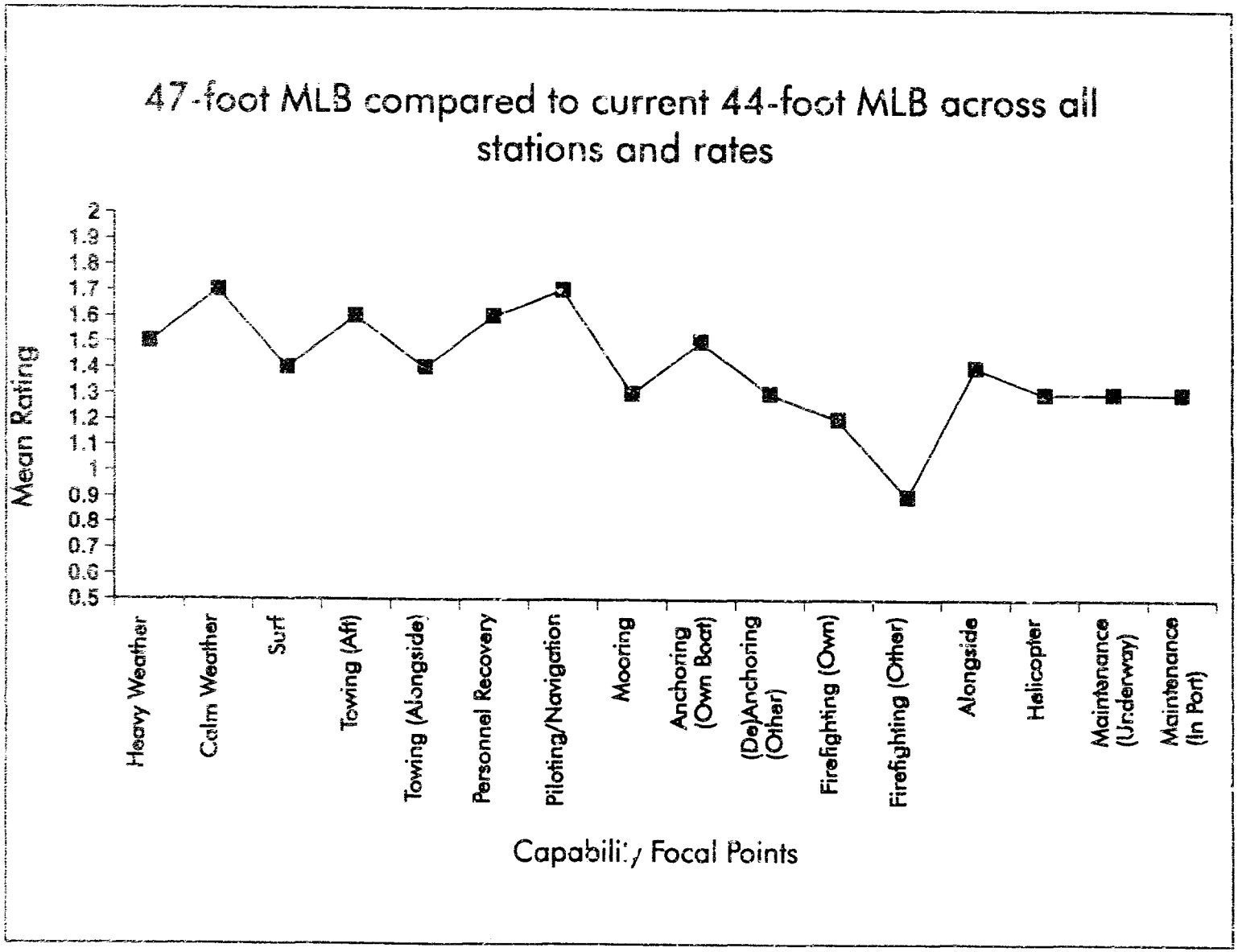


Figure 4. Capability focal points for the 47-Foot MLB compared with the 44-MLB across all stations and rates.

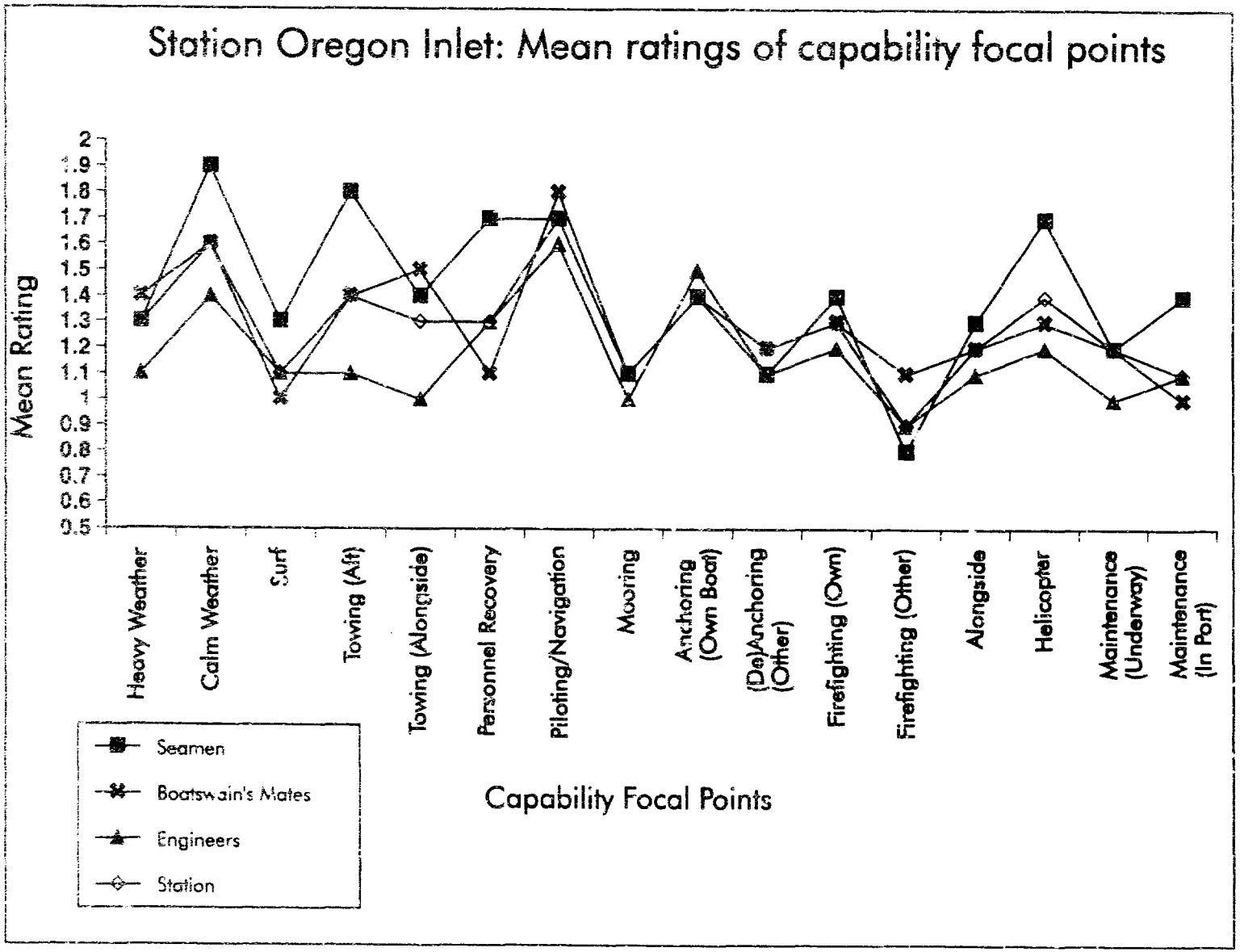


Figure 4-1. Station Oregon Inlet: 47-Foot MLB compared with the 44-Foot MLB mean ratings of capability focal points.

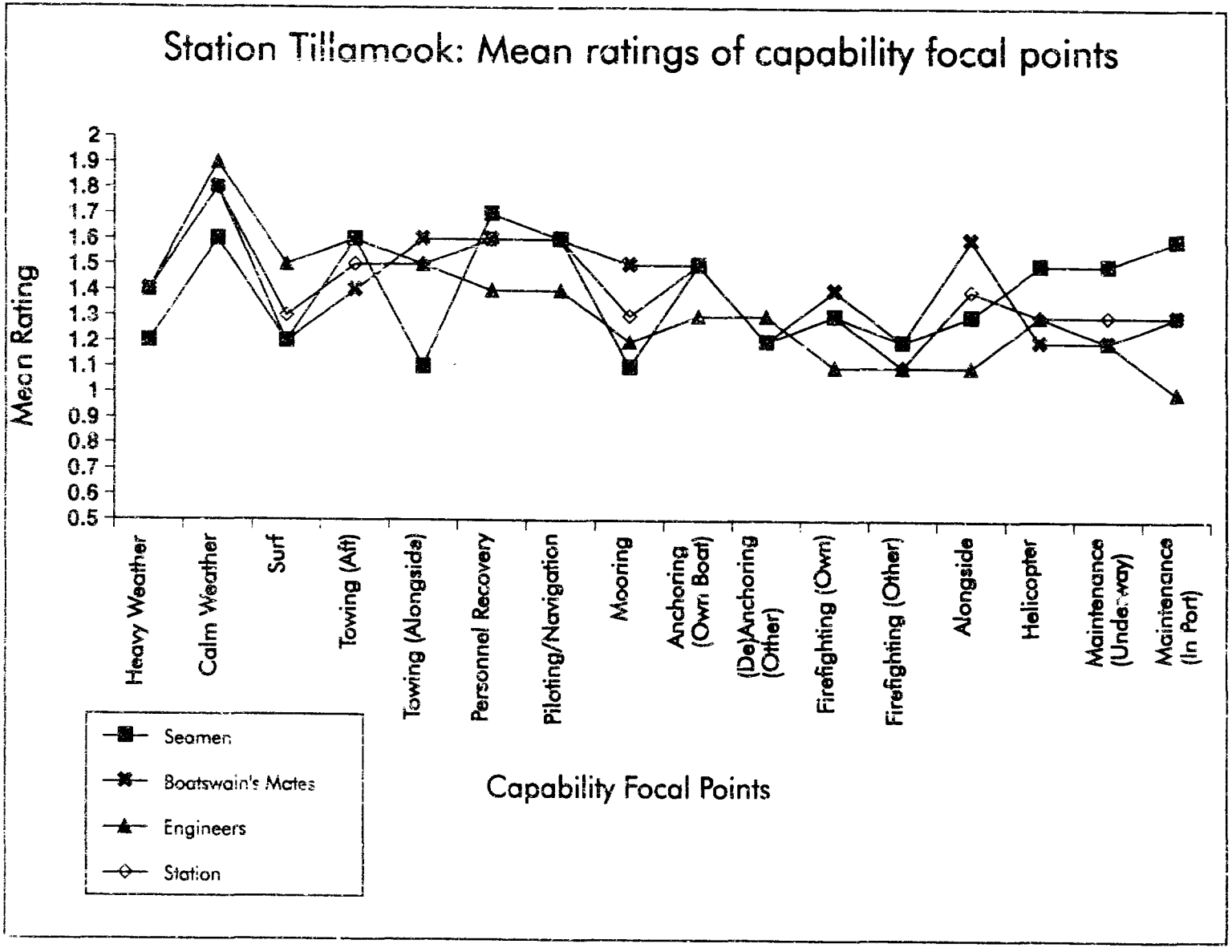


Figure 4-2. Station Tillamook: 47-Foot MLB compared with the 44-Foot MLB mean ratings of capability focal points.

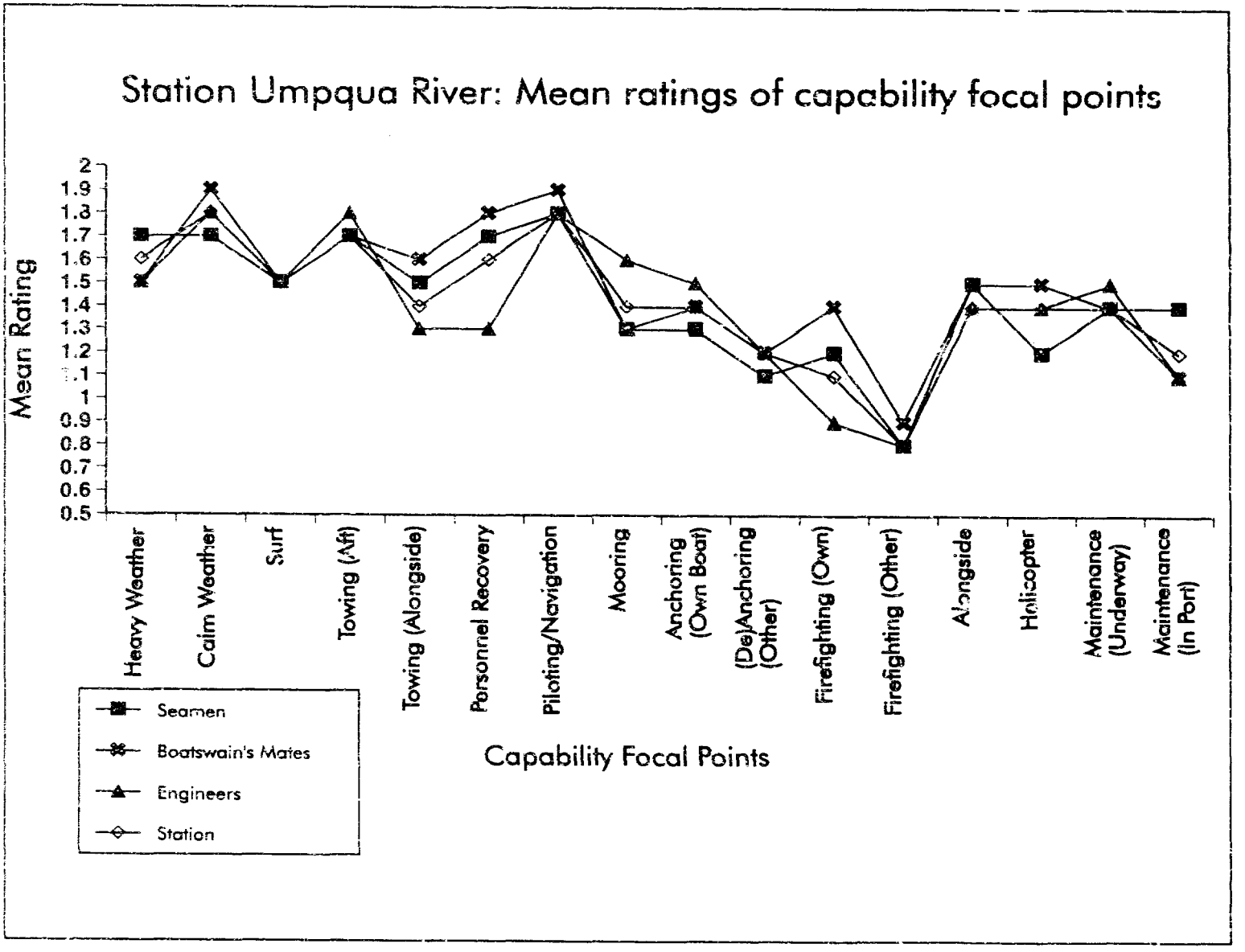


Figure 4-3. Station Umpqua River: 47-Foot MLB compared with the 44-Foot MLB mean ratings of capability focal points.

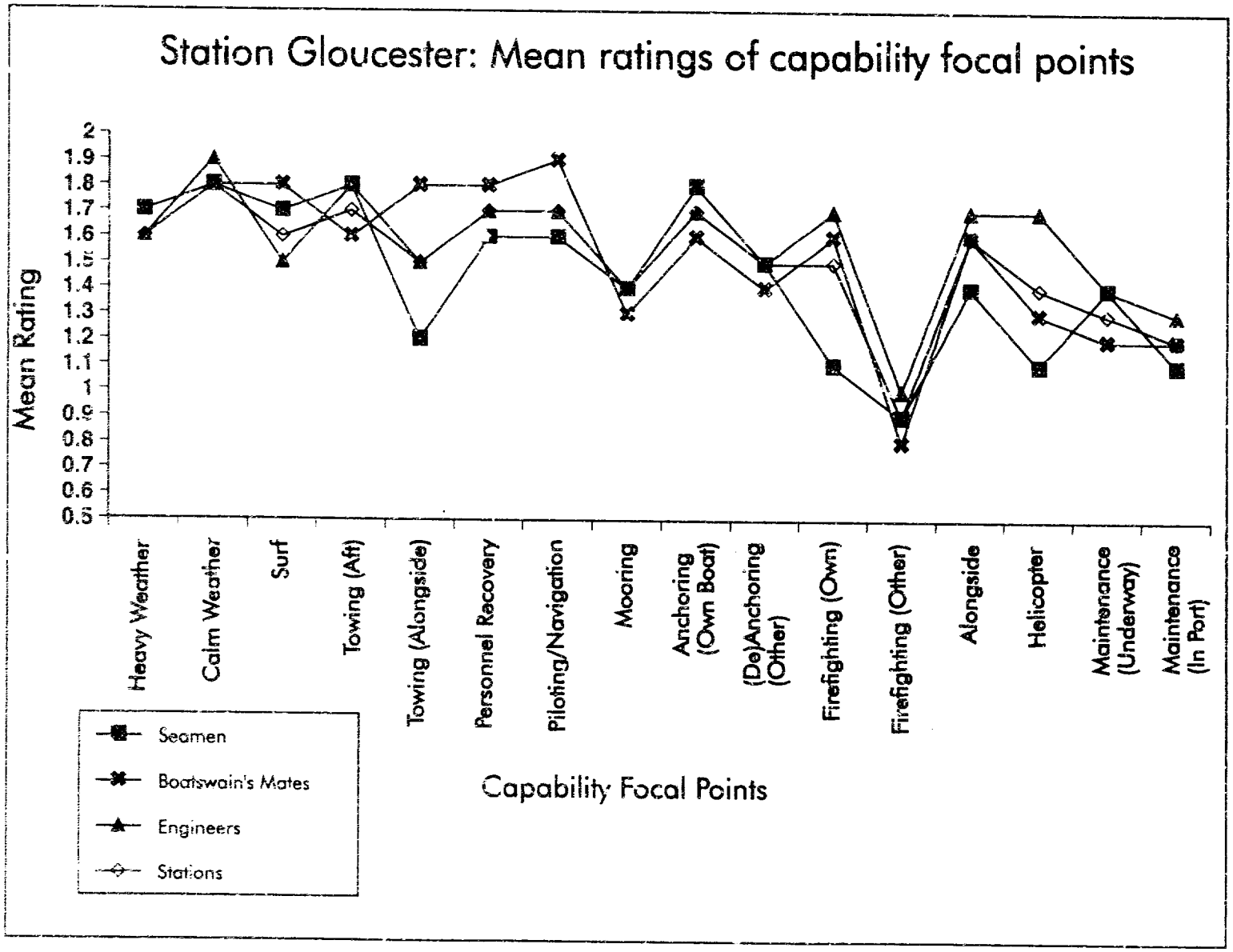


Figure 4-4. Station Gloucester: 47-Foot MLB compared with the 44-Foot MLB mean ratings of capability focal points.

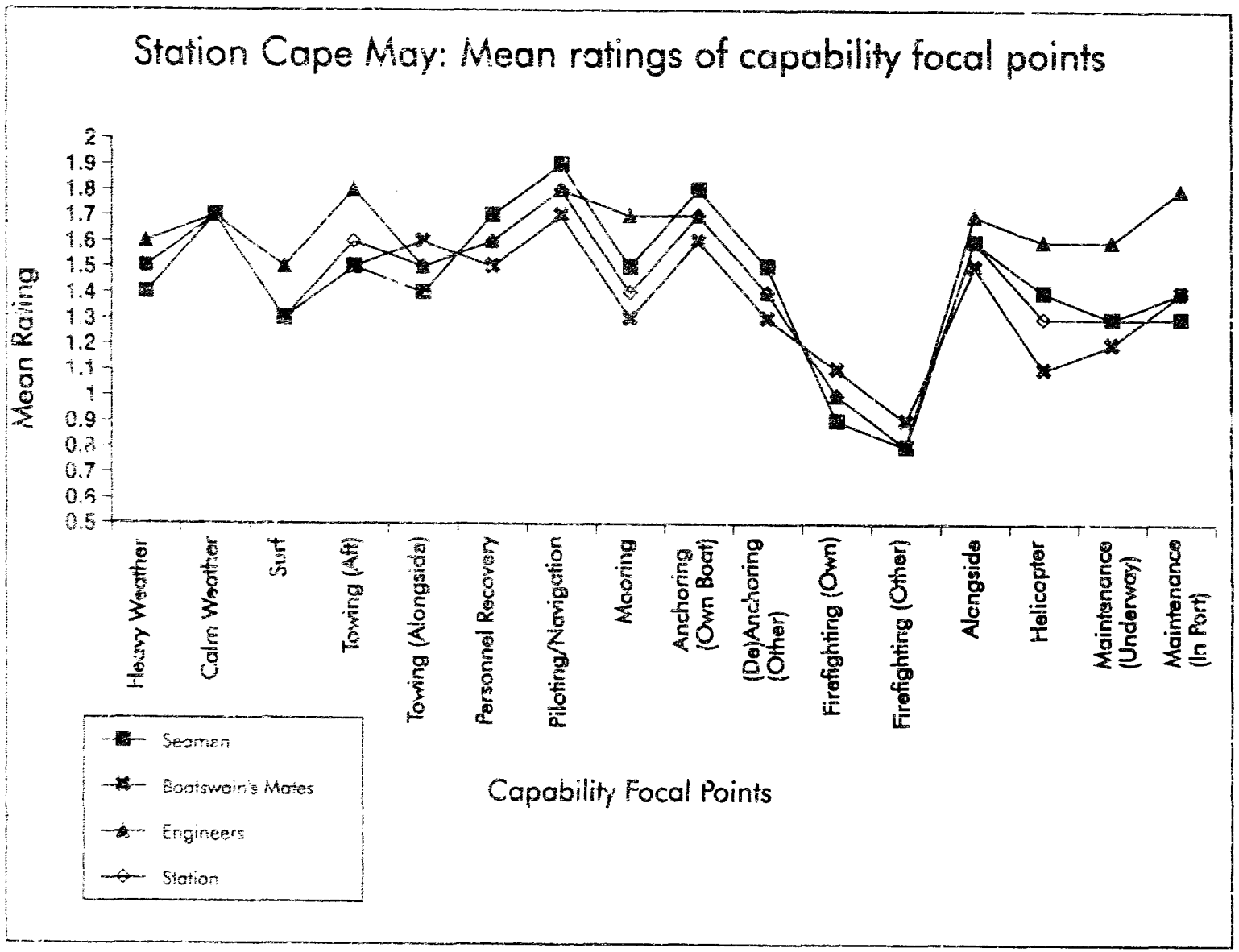


Figure 4-5. Station Cape May: 47-Foot MLB compared with the 44-Foot MLB mean ratings of capability focal points.

3.3 Highest Rated Problems from the Small Group Discussion List

Summary data for the Small Group Discussion List is shown in Appendix H. Because this survey provided supplemental information to the OFP results, only the items with the highest rated importance across all stations and rates will be described here (on a 0-none to 5-high scale). Five items had mean values greater than or equal to 3.0, and 13 items had mean values between 2.0 and 3.0. Table 4 contains each of these items, corresponding mean scores, and a brief summary of crew comments.

Table 4. Highest rated items from the small group discussions across all stations.

Highest rated problems from the Problem or Wish List Survey (0 to 5 scale).		
Scores 3.0 or greater		
Firefighting Equipment	3.6	inadequate (at least need another pump for dewatering)
Lazarette Hatch	3.2	too small
Global Positioning System	3.1	add this and integrate it with other electronics (radar, plotter, autopilot)
Deck Plate Fasteners	3.1	too hard to remove/close the fasteners in the Engine Room and Forward Compartment; those in Survivors' Compartment do not fasten well, and it is hard to tell when they are fastened
Non-skid Pads	3.0	come up too easily, need a better system (note that some stations had not yet had the deck sandblasted and new broader-area pads put on)
Scores 2.5 to 2.9		
Crew Member Seats (Enc. Bridge)	2.9	too small; at the wrong height for sitting; too crowded in Enclosed Bridge--either make the seats to fit crew members or remove them (could make Coxswains' Chairs a little smaller)
Paint	2.7	requires too much maintenance (crews can do a better job of painting if it has to be painted, or remove the paint entirely); environmental concerns are an emerging issue
Navigation Area	2.7	table not easy to get in and out of position; cannot egress quickly with table in place; gear can fly out of box in a roll; instruments fall off the table; make the table easier to use; create secure storage for navigation gear; put a lip and/or a magnetic strip on the table
Steering/Throttle	2.6	not responsive enough (electrical pump); hard to tell if in gear or in neutral; relates to operational problems in surf and mooring
Microphone Box	2.5	too hard to use (not used) because of small size

Highest rated problems from the Problem or Wish List Survey (0 to 5 scale).		
Scores 2.0 to 2.4		
Deck Plates (Forward Comp.)	2.4	not much traction; need pattern to cross; need easier/quicker fasteners; put in small access ports to remove small amounts of water more easily; things can fall through; not very strong (some failures already)
Deck Plates (Engine Room)	2.2	(same as preceding comment)
Deck Surface (Survivors' Comp.)	2.2	very hard to keep clean; use a material that is easier to clean, or make it a darker color; a few comments that the plates could be smaller
Datum Point Marker	2.2	too hard to reach from the deck; put some lower so crew members can throw them, or make them release more quickly
Spot Light	2.1	unreliable; need an auxiliary spot light and more places to plug it in; have to position the light after it is turned on (can hamper night vision); not easy to direct the light with the control system
Pickup Port/Grating	2.1	too heavy; needs to be narrower and/or have a rub rail added to it; not very strong; pins are hard to put in place (recommend positive clip system); slippery; need traction in opposite direction
Communication Equipment	2.1	unreliable; not very easy to use, disrupts many operations
Space (Enclosed Bridge)	2.1	too crowded; suggestions to make Coxswains' Chairs smaller, take out crew member seats, and extend cabin

As seen in Table 4, many of the items receiving high importance ratings in the small group discussions were related to OFPs receiving lowest ratings. Most obvious was firefighting equipment which directly relates to the low ratings given previously for Firefighting OFPs. Similarly, several of the items on this list are related to Maintenance OFPs, and steering/throttle relates to problems with Surf and Mooring OFPs. Communication problems were pervasive in all operations and missions, with repeated emphasis by crew members in written comments and group discussions. The next section of the report brings together highlights of the results and focuses on the largest problems found with the current 47-Foot MLB.

4.0 DISCUSSION

4.1 Summary of Research

This report has delineated the results of the administration of the Operational Focal Point (OFP) survey and the small group discussions at the five USCG stations participating in the OT&E of the preproduction 47-Foot MLB. In general, the survey process was well-accepted and appeared to be sensitive to differences in OFPs. This was largely due to the success of preliminary efforts aimed at refining the data collection process (Phase I).

The most significant finding was that the 47-Foot MLB generally was highly rated for suitability and effectiveness when compared to both the ideal MLB and the 44-Foot MLB (with few exceptions). The following summarizes areas where attention can be focused to make the 47-Foot MLB better suited to perform its operations and missions.

Table 5 contains an integrated list of lowest rated items from both comparisons of the 47-Foot MLB (with the ideal MLB and the 44-Foot MLB). Summaries of crew comments about the nature of the problems and possible solutions are also shown.

Table 5. Integrated list of low rated focal points and crew comments.

Lowest rated Operational Focal Points for the OFP survey	
Firefighting (Other Boat)	need better equipment (e.g., at least another pump for dewatering, or a power takeoff system, or a fire monitor)
Firefighting (Own Boat)	lack of fire extinguishers; no capability for dewatering if P-5 is used; hose and nozzle inappropriate material; inadequate P-5 fuel (one gallon); P-5 can needs to be secured; hose too short--needs to reach length of vessel
Mooring	steering/throttle problems (use detents); sail area effects are pronounced, deeper draft makes boat drift faster in current; bitts/chocks arrangement could be improved; communication is difficult in some conditions (e.g., wind); hand rails over mooring bitts makes them h[illegible]d to use; pickup port grating needs to be recessed (e.g., 3").
(De)Anchoring (Other Boat)	large sail area may cause dangerous drift; too top-heavy; may have too much power; too close for a large boat; unable to see and observe crew members
Helicopter Operations	difficult to communicate among crew members and with helicopter; not much space; limited visibility; improve communication system, add a pad for lowering the basket, and add a safety grounding wand
Maintenance Underway	need easier access to components (e.g., sea water pumps), better deck plate system; lazarette hard to get into; lack of space; need handholds in engine room and other spaces; dangerous to change navigation lights or to free up the spotlight when underway; difficult to communicate with person in Engine Room
Maintenance (In Port)	poor paint system (paint not needed); deck lights get water in them; non-stick pads are a problem; difficult to go up on radar arch; too many cracks and crevices for dirt/grime to get into; need glass sea strainers for easier checking; decks in Enclosed Steering and Survivors' Compartment get dirty too easily
Surf Operations	steering/throttle problems (helm response too slow with electronic v. hydraulic pump), need more D-rings, need more handholds, better non-skid system

4.2 Most Significant Issues

Nine most significant enhancements to the current 47-Foot MLB design were identified based on the crew assessments. The order of presentation is based on judgments of approximate impacts on meeting mission requirements.

- Steering and throttles need to be improved -- faster steering response (e.g., use of hydraulic v. electric pump) and the use of obvious throttle detents (related to surf and mooring difficulties) would make the boat-handling better. Improved steering would allow the boat to move into proper position faster in surf. Improved throttles would ensure that the boat could be controlled properly when approaching docks, other vessels, or people in the water. Improvements in both steering and throttles would make it easier and safer to clear bars and narrow channels.

- Communication equipment needs to be made reliable and effective (both internal and external) -- electronic systems are seen as very unreliable and not always useful. Communication problems were mentioned in the context of almost all operations, and crew members were reported to frequently serve only to transfer messages (e.g., during helicopter operations). Communication could be facilitated by the use of headsets or individual radios. For example, use of headsets during helicopter operations would enable crew members to hear coordination commands better, thereby making the operation safer. The same benefits would be possible in other operations also (e.g., towing).

- D-rings and handholds throughout the vessel require enhancement -- in particular, D-rings are needed aft near the tow bitt, ladder, and near the forward working areas. Currently crew members are working by the tow bitt (relatively) unsecured. An extra person may also be needed to aid in personnel recovery due to a lack of securing devices near the pickup port. Handholds are needed for going between compartments throughout the vessel, in the Engine Room, and in spaces forward of the Survivors' Compartment. Hand rails alongside also need to be modified so that crew members can slide their hands along them without lifting them over the rail braces. Crew members reported feeling like they could go overboard in rough weather when they have to lift their hands from the rail.

- Navigation area needs to be easier and safer to use -- specifically, the chart table should be easier to put in place and to get out from under in a hurry. Also, an edge on the table and/or a magnetic strip would keep instruments from falling off. The navigation gear box should be secure and easy to reach from a belted, sitting position. Consideration should be given to an electronics package upgrade (i.e. GPS, radar with plotter, all interfaced) to permit greater hours of direct search (v. navigation) and better search pattern maintenance.

- Seating throughout the vessel needs to be improved to enhance effectiveness and safety -- crew member seats need to be redesigned to comfortably accommodate the range of users including: 1) seat shapes supportive of the lower back that do not require continuous leg use to maintain stability in the seat, and 2) seat belts made to fit crew sizes. The locations, shapes, and effectiveness of seating adjustments and position locking mechanisms need to be improved so they are easily use and stay in place under rough conditions (some seats

nominally fixed have collapsed, despite efforts to ensure tightness); and reachable handholds should be provided near seats (particularly crew chairs on flying bridge). Seats should be positioned such that crew members can use the equipment from a seated, belted position.

- Head (bathroom) needs to be improved so it is more likely to be used underway -- place on the starboard side so the door from the auxiliary space does not open into it, put in a privacy curtain or walls, secure it to the deck, add handholds, and consider moving it into an area further aft where motion will not preclude use. The current location of the head discourages crew members (or survivors) from using it (dehydration and fatigue are expected to be exacerbated when fluids are avoided in order to keep from having to use the head).

- Maintenance needs to be reduced -- areas where this is possible include paint, non-skid deck, deck plates (fasteners in particular), interior deck surfaces, and insulation (include a gutter on the buoyancy chamber to prevent water from falling into survivors' compartment). Better accessibility to regularly maintained components is needed also. These changes would reduce workload and fatigue that compounds mission-related fatigue.

- HVAC system needs to be reliable, non-leaking and not potentially toxic to crew members -- the defrosters need to be improved, and fans need to be put in with heaters to circulate warm air better. The in-port heaters are not effective; they need fans to distribute the heat also. Failure of the HVAC system to work adequately has led to crew members experiencing heat and cold stress already.

- Firefighting/dewatering equipment needs to be improved -- this would minimally include adding another pump to permit simultaneous fighting and dewatering.

4.3 Conclusions

Three general conclusions can be drawn from the results of this assessment. These are:

- *Overall, crews judged the current 47-Foot MLB design to represent a general improvement over the 44-Foot MLB with regard to effectiveness and suitability for meeting its overall mission.*

- *Overall, crews judged the current 47-Foot MLB design to be near the "Ideal" with regard to effectiveness and suitability for meeting its overall mission, but does have room for improvement in certain focal point areas (particularly in the nine highlighted areas).*

- *Overall crew judgments support the assessment that the 47-Foot MLB will be an effective and suitable replacement for the 44-Foot MLB, particularly after the most significant issues have been addressed.*

5.0 REFERENCES

Bittner, A. C., Jr. (1992). Robust testing and evaluation (T&E) of systems: Framework, approaches, and illustrative tools. Human Factors, 34, 477-484.

Bramwell, A.T., Bittner, A.C., Jr. and Morrissey, S.J. (1992). Repeated measures analysis: Issues and options." International Journal of Industrial Ergonomics, 10, 185-197.

Morrissey, S.J., Bittner, A.C., Jr. and Arcangeli, K.K. (1990). Accuracy of a ratio-estimation method to set maximum acceptable weights in complex lifting tasks. International Journal of Industrial Ergonomics, 5, pp. 169-174.

Stevens, S. S. (1975). Psychophysics. New York, NY: John Wiley & Sons.

APPENDIX A:

Number of crew members in each rank by rating

THIS PAGE INTENTIONALLY LEFT BLANK.

Table A-1: Station Oregon Inlet: Number of crew members in each rank by rating.

RANK	RATING			
	Seamen	**Boatswain's Mates**	**Engineers & Firemen**	**Station**
Seamen				
E-2: Apprentice	3	--	0	3
E-3: Seaman	2	--	0	2
Petty Officers				
E-4: 3rd Class	--	1	3	4
E-5: 2nd Class	1 MST	4	2	7
E-6: 1st Class	--	2	1	3
Chiefs				
E-7: Chief	--	0	0	0
E-8: Senior Chief	--	0	0	0
E-9: Master Chief	--	1	0	1
Warrant Officers				
W-1: Warrant Officer	--	0	0	0
W-2: Chief Warrant Officer	--	0	0	0
Station Total	**6**	**8**	**6**	**20**

Table A-2: Station Tillamook: Number of crew members in each rank by rating.

RANK	RATING			
	Seamen	Boatswain's Mates	Engineers & Firemen	Station
Seamen & Firemen				
E-2: Apprentice	0	--	0	0
E-3: Seaman	5	--	1	6
Petty Officers				
E-4: 3rd Class	--	5	3	8
E-5: 2nd Class	--	2		2
E-6: 1st Class	--	1	1	2
Chiefs				
E-7: Chief	--	3	1	4
E-8: Senior Chief	--			
E-9: Master Chief	--			
Warrant Officers				
W-1: Warrant Officer	--			
W-2: Chief Warrant Officer	--	1		1
Station Total	**5**	**12**	**6**	**23**

Table A-3: Station Umpqua River: Number of crew members in each rank by rating.

RANK	RATING			
	Seamen	Boatswain's Mates	Engineers & Firemen	Station
Seamen				
E-2: Apprentice	1	--	0	1
E-3: Seaman	7	--	1	8
Petty Officers				
E-4: 3rd Class	--	1	4	5
E-5: 2nd Class	--	2	1	3
E-6: 1st Class	--	2	1	3
Chiefs				
E-7: Chief	--	1	0	1
E-8: Senior Chief	--	1	0	1
E-9: Master Chief	--	0	0	0
Warrant Officers				
W-1: Warrant Officer	--	0	0	0
W-2: Chief Warrant Officer	--	0	0	0
Station Total	**8**	**7**	**7**	**22**

Table A-4: Station Gloucester: Number of crew members in each rank by rating.

RANK	RATING			
	Seamen	Boatswain's Mates	Engineers & Firemen	Station
Seamen				
E-2: Apprentice	0	--	0	0
E-3: Seaman	4	--	2	6
Petty Officers				
E-4: 3rd Class	--	1(1)	2(1)	3(2)
E-5: 2nd Class	--	4(3)	1(1)	5(4)
E-6: 1st Class	--	0	0	0
Chiefs				
E-7: Chief	--	0	0	0
E-8: Senior Chief	--	0	0	0
E-9: Master Chief	--	0	0	0
Warrant Officers				
W-1: Warrant Officer	--	0	0	0
W-2: Chief Warrant Officer	--	0	0	0
Station Total	**4**	**5(9)**	**5(7)**	**14(6)**

(reservist in parentheses)

Table A-5: Station Cape May: Number of crew members in each rank by rating.

RANK	RATING			
	Seamen	**Boatswain's Mates**	**Engineers & Firemen**	**Station**
Seamen				
E-2: Apprentice	1	--	1	2
E-3: Seaman	11	--	2	13
Petty Officers				
E-4: 3rd Class	--	7	2	9
E-5: 2nd Class	--	2	2	4
E-6: 1st Class	--	3	1	4
Chiefs				
E-7: Chief	--	1	1	2
E-8: Senior Chief	--	0	0	0
E-9: Master Chief	--	0	0	0
Warrant Officers				
W-1: Warrant Officer	--	0	0	0
W-2: Chief Warrant Officer	--	1	0	1
Station Total	**12**	**14**	**9**	**35**

APPENDIX B:

Operational experience with the 44-Foot MLB and the 47-Foot MLB

THIS PAGE INTENTIONALLY LEFT BLANK.

Table B-1. Station Oregon Inlet: Operational Experience with the 44-Foot MLB and the 47-Foot MLB.

Item	RATING														
	Seamen				Boatswain's Mates				Engineers				Station		
	$\bar{X}$	SD	N		$\bar{X}$	SD	N		$\bar{X}$	SD	N		$\bar{X}$	SD	N
Most common sea state (in feet)															
44-Foot MLB	4	2	6		6	3	8		4	1	6		5	2	20
47-Foot MLB	3	2	6		4	2	8		4	1	6		3	2	20
Most severe sea state (in feet)															
44-Foot MLB	11	2	6		14	3	8		14	2	6		13	3	20
47-Foot MLB	7	3	6		10	4	8		9	2	6		9	3	20
Average length of mission (in hours)															
44-Foot MLB	4	3	6		5	2	8		6	1	6		5	2	20
47-Foot MLB	4	1	6		4	2	7		5	1	6		4	1	19
Longest mission (in hours)															
44-Foot MLB	10	7	6		14	5	8		12	4	6		12	5	20
47-Foot MLB	6	3	5		7	3	7		9	1	6		7	3	18

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table B-2. Station Tillamook. Operational experience with the 44-Foot MLB and the 47-Foot MLB.

Item	RATING														
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Most common sea state (in feet)												
44-Foot MLB	5	1	5	6	2	12	6	2	6	6	2	23
47-Foot MLB	5	1	5	6	2	12	5	2	6	5	2	23
Most severe sea state (in feet)												
44-Foot MLB	14	4	5	19	5	12	20	10	6	18	7	23
47-Foot MLB	7	2	5	13	6	12	11	5	6	12	6	23
Average length of mission (in hours)												
44-Foot MLB	3	1	5	3	1	12	3	2	6	3	1	23
47-Foot MLB	2	2	5	2	1	12	2	1	6	2	1	23
Longest mission												
44-Foot MLB	9	4	5	18	11	12	15	4	6	15	9	23
47-Foot MLB	4	1	5	5	3	12	4	2	6	4	2	23

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table B-3. Station Umpqua River: Operational Experience with the 44-Foot MLB and the 47-Foot MLB.

Item	RATING														
	Seamen				Boatswain's Mates				Engineers				Station		
	$\bar{X}$	SD	N		$\bar{X}$	SD	N		$\bar{X}$	SD	N		$\bar{X}$	SD	N
Most common sea state (in feet)															
44-Foot MLB	6	1	8		7	1	7		6	2	7		6	1	22
47-Foot MLB	6	1	8		6	1	7		6	1	7		6	1	22
Most severe sea state (in feet)															
44-Foot MLB	11	2	8		22	9	7		17	5	7		17	7	22
47-Foot MLB	7	2	8		10	3	7		10	3	7		9	3	22
Average length of mission															
44-Foot MLB	4	1	8		4	2	7		4	1	7		4	1	22
47-Foot MLB	4	2	8		3	1	7		3	2	8		3	2	22
Longest mission (in hours)															
44-Foot MLB	9	5	8		16	10	7		18	8	7		14	8	22
47-Foot MLB	6	2	8		6	3	7		7	4	7		6	3	22

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table B-4. Station Gloucester: Operational Experience with the 44-Foot MLB and the 47-Foot MLB.

Item	RATING														
	Seamen				Boatswain's Mates				Engineers				Station		
	$\bar{X}$	SD	N		$\bar{X}$	SD	N		$\bar{X}$	SD	N		$\bar{X}$	SD	N
Most common sea state (in feet)															
44-Foot MLB	5	2	4		4	1	5		6	1	4		5	1	13
47-Foot MLB	4	1	4		4	1	5		5	1	4		4	1	13
Most severe sea state (in feet)															
44-Foot MLB	17	6	4		18	3	5		19	6	5		18	5	14
47-Foot MLB	16	5	4		19	9	5		14	6	5		17	7	14
Average length of mission (in hours)															
44-Foot MLB	6	2	4		3	2	5		4	2	5		4	2	14
47-Foot MLB	3	1	4		2	1	5		3	1	5		3	1	14
Longest mission (in hours)															
44-Foot MLB	10	4	4		8	4	5		6	2	5		8	4	14
47-Foot MLB	8	3	4		8	3	5		6	3	5		7	3	14

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table B-5. Station Cape May: **Operational Experience with the 44-Foot MLB and the 47-Foot MLB.**

Item	RATING													
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Most common sea state (in feet)												
44-Foot MLB	6	6	11	5	2	12	3	2	7	5	4	30
47-Foot MLB	3	1	12	4	2	14	4	1	9	4	1	35
Most severe sea state (in feet)												
44-Foot MLB	7	4	11	15	6	12	8	4	7	11	6	30
47-Foot MLB	8	3	12	11	3	14	9	3	9	9	3	35
Average length of mission (in hours)												
44-Foot MLB	2	1	11	3	2	12	2	2	7	3	2	30
47-Foot MLB	3	1	12	2	0.5	14	2.5	1	9	2	1	35
Longest mission (in hours)												
44-Foot MLB	5	3	11	10	7	12	7	5	7	8	6	30
47-Foot MLB	7	3	12	6	3	14	5	2	9	6	3	35

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

APPENDIX C:

Crew characteristics

THIS PAGE INTENTIONALLY LEFT BLANK.

Table C-1. Station Oregon Inlet: Crew characteristics.

Item	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Number of years in the U. S. Coast Guard	2	1	4	10	7	7	8	6	4	7	6	15
Age (in years)	21	3	6	30	7	8	28	4	6	27	6	20
Hours per week on the 47-Foot MLB	3	4	6	7	10	8	7	7	6	6	7	20
Gender of crew members												
• Male	--	--	5	--	--	8	--	--	6	--	--	19
• Female	--	--	1	--	--	0	--	--	0	--	--	1
Number of qualified crew												
• 47-Foot MLB	--	--	4	--	--	7	--	--	6	--	--	17
• 44-Foot MLB	--	--	4	--	--	7	--	--	[illegible]	--	--	16

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table C-2. Station Tillamook: Crew characteristics.

Item	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Number of years in the U. S. Coast Guard	2	1	5	12	6	10	8	8	5	8	7	20
Age (in years)	23	2	5	30	5	12	30	6	6	29	5	23
Hours per week on the 47-Foot MLB	4	3	5	8	12	12	7	7	6	7	9	23
Gender of crew members												
• Male	--	--	3	--	--	12	--	--	6	--	--	21
• Female	--	--	2	--	--	0	--	--	0	--	--	2
Number of qualified crew												
• 47-Foot MLB	--	--	2	--	--	7	--	--	4	--	--	13
• 44-Foot MLB	--	--	5	--	--	12	--	--	6	--	--	23

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table C-3. Station Umpqua River: Crew characteristics.

Item	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Number of years in the U. S. Coast Guard	3	2	7	10	5	6	7	6	4	6	5	17
Age (in years)	24	4	8	30	6	7	28	6	7	27	6	22
Hours per week on the 47-Foot MLB	12	12	8	6	5	7	10	6	7	10	8	22
Gender of crew members												
• Male	--	--	6	--	--	7	--	--	7	--	--	20
• Female	--	--	2	--	--	0	--	--	0	--	--	2
Number of qualified crew												
• 47-Foot MLB	--	--	3	--	--	4	--	--	6	--	--	13
• 44-Foot MLB	--	--	8	--	--	7	--	--	7	--	--	22

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table C-4. Station Gloucester: Crew characteristics.

Item	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Number of years in the U. S. Coast Guard	4	2	3	7	2	4	5	4	3	5	3	10
Age (in years)	25	2	4	27	1	5	25	4	5	26	3	14
Hours per week on the 47-Foot MLB	14	2	4	9	2	5	10	5	5	11	4	14
Gender of crew members												
• Male	--	--	4	--	--	5	--	--	5	--	--	14
• Female	--	--	0	--	--	0	--	--	0	--	--	0
Number of qualified crew												
• 47-Foot MLB	--	--	4	--	--	5	--	--	5	--	--	14
• 44-Foot MLB	--	--	4	--	--	5	--	--	5	--	--	14

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table C-5. Station Cape May: Crew characteristics.

Item	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Number of years in the U. S. Coast Guard	3	1	12	10	6	10	8	7	5	6	6	27
Age (in years)	22	2	12	30	7	14	29	8	9	27	7	35
Hours per week on the 47-Foot MLB	12	20	12	5	4	14	6	7	9	8	12	35
Gender of crew members												
• Male	--	--	8	--	--	14	--	--	9	--	--	31
• Female	--	--	4	--	--	0	--	--	0	--	--	4
Number of qualified crew												
• 47-Foot MLB	--	--	12	--	--	14	--	--	9	--	--	35
• 44-Foot MLB	--	--	9	--	--	10	--	--	5	--	--	24

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

APPENDIX D:

Operational focal points survey

(June 1994)

THIS PAGE INTENTIONALLY LEFT BLANK.

This appendix contains the instructions for the Operational Focal Points (OFP) survey, survey items, and examples of sub-detailed items for the OFPs.

D-1. General Instructions

The following section contains the general directions provided at the beginning of the OFP survey.

> Thank you for participating in this survey. You are asked to complete this survey because you and your fellow crew members have experience with the pre-production 47-Foot MLB. The responses you provide to us will help determine the relative suitability/effectiveness of the current 47-Foot MLB design. This information will allow the engineers to focus future design efforts at improving the 47-Foot MLB prior to full production.
>
> The questions in this survey are divided into three sections:
>
> - background,
> - comparison of the suitability/effectiveness of the current 47-Foot MLB to your perception of the ideal MLB, and
> - comparison of the suitability/effectiveness of the current 47-Foot and 44-Foot MLB.
>
> The questions in the two comparison sections are identical in content. The instructions differ, however. We ask that you pay special attention to the instructions for these two sections.
>
> We will code all the questionnaires, and a master list with your name and the codes we assign will be kept by the Principal Investigator, Dr. Alvah Bittner. He will not show this list to any Coast Guard personnel; therefore, all responses you provide will be kept confidential.

After reviewing these instructions, researchers directed crew members to go to the next section of the survey: Background (D-2).

D-2. Background

The following are the background questions in the OFP survey. No instructions were provided as the items were considered to be relatively self-explanatory, and researchers were available to assist crew members if they were uncertain about the meanings of the questions.

Name: _____ ID No. _____

How many years experience do you have in the Coast Guard? _____

What is your rating? _____ (occupation, e.g., MK, BM, SN)

How many years experience do you have in your rating? _____

List cross training you have in specialties other than that specific to your rate:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

For each of the 5 questions below, enter the number for the 44-Foot MLB on the LEFT and the number for the 47-Foot MLB on the RIGHT. (Please enter a single number rather than a range of numbers.)

44-Foot MLB		47-Foot MLB
	Number of HOURS OF EXPERIENCE (training and operational)	
	Most COMMON SEA STATE under which you operated (in feet)	
	Most SEVERE SEA STATE under which you operated (in feet)	
	AVERAGE LENGTH OF MISSION (in hours)	
	LONGEST MISSION (in hours)	

Additional Background Questions provided by the USCG R & D Center

1. What is your age in years? ____

2. What is your sex? ____ Male ____ Female

3. What is your height? ____ feet ____ inches

4. What is your weight? ____ lbs.

5. How long have you been in your current assignment? ____ years ____months ____weeks

6. What is your present **rank** (e.g., First Class, Third Class, Chief)? _____

7. How long have you been in your present **rank**? ____ years ____ months ____weeks

8. Are you qualified on the **47-Foot MLB**? ____ Yes ____ No

   If **Yes**, how long? ____ months ____ weeks

9. Are you qualified on the **44-Foot MLB**? ____ Yes ____ No

   If **Yes**, how long? ____ years ____ months ____ weeks

10. On average, how many **hours per week** do you spend on-board the 47-Foot MLB? ____ hrs.

11. On average, how many hours per week do you spend on-duty? ____ hrs.

After crew members completed the background questions, they were directed to turn to the instructions for the next section: Current 47-Foot MLB compared with the Ideal MLB (D-3).

D-3. Current 47-Foot MLB compared with the Ideal MLB

This section provides the instructions for the 47-Foot MLB comparison with the ideal MLB, OFPs, and an example of sub-detailed OFP items.

Instructions to crew members:

In this section of the survey we will ask you to compare the current 47-foot MLB with the ideal MLB on a number of operational focal points (OFPs). The ideal MLB will have the best equipment and design, based on your personal preferences, that facilitates activities implied in each OFP.

You will use a 0 -100 point scale, like the following example, to make your comparisons. Each point on the scale represents percentages of the ideal in 5% increments.

Example																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

For each question in this section, if the equipment and design of the current 47-foot MLB are as good as they can be compared to the ideal MLB, then fill in the bubble for 100%. If the equipment and design of the current 47-foot MLB are less than they can be compared to the ideal, then choose a percentage that represents how close to the ideal you feel it is. For example, if you feel the 47-Foot MLB is only 75% of the ideal MLB on a certain OFP, then fill in the bubble that corresponds to 75% on the scale. Depending on how you respond to OFPs, we may ask you to complete more detailed questions related to various aspects of the OFPs. A researcher will notify you when to complete the detailed questions.

We will also ask you to provide an estimate of the number of hours of experience you have on the 47-Foot MLB for each of the OFPs. Please provide this estimate on the right-hand column next to the OFP scale. Finally, a blank space has been provided to the right of the OFP name, above the rating scale. Please use this space to provide any additional comments regarding the OFP.

If there were no questions, crew members were asked to begin this section of the survey. Crew members were instructed to rate each OFP based on their experiences with the 47 Foot MLB. If they did not have any experience on a certain OFP, crew members were instructed to specify NOT APPLICABLE (N/A) for the OFP. Crew members provided ratings on all OFPs shown in this survey section in table D-1.

Table D-1. OFP Survey for 47-Foot MLB compared with ideal MLB.

Heavy Weather Operations																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Calm Weather Operations																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Surf Operations																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Towing (Aft)																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Towing (Alongside)																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Personnel Recovery																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Piloting/Navigation																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Mooring																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Anchoring (Own Boat)																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Anchoring (Other Boat)																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Firefighting (Own Boat)																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Firefighting (Other Boat)																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Alongside Operations																				
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%

Helicopter Operations																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Maintenance (Underway)																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Maintenance (In Port)																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Mission																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Search																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Rescue																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Maritime Law Enforcement																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Port Safety and Security																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Marine Environmental Response																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

Recreational Boating Safety																					
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	

A pre-determined threshold value of 75 was used to ask crew members to complete detailed questions. In other words, if an OFP was rated below 75, the researchers directed crew members to the appropriate section of the survey where detailed questions were located. Table D-2 shows the detailed questions for Heavy Weather Operations. Each OFP had similar detailed questions.

Table D-2. Heavy Weather Operations detailed survey items.

M[illegible]euverability										
[illegible]	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Speed										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

[Boat] Motions										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Arrangements [of equipment, where equipment is placed]										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Equipment [suitability of the equipment that is provided]										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Visibility										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Crew Comfort										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Safety										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Communication - internal										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Communication - external										
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Crew members would rate, using the same scale as in the OFPs, the detailed questions prior to continuing to the next section of the survey. Once all of the OFPs and the respective detailed questions were rated, crew members were directed to the next section of the survey: Comparison of the 47-Foot MLB with the 44-Foot MLB (D-4).

D-4. Comparison of the 47-Foot MLB with the 44-Foot MLB

The following section provides the instructions for the 47-Foot MLB comparison with the 44-Foot MLB, OFPs, and an example of sub detailed OFP items.

detailed questions for Heavy Weather Operations (same as those in table D-2 using the different scale). Each OFP in this section of the survey had similar detailed questions.

Table D-4. Heavy Weather Operations detailed survey items.

Maneuverability																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Speed																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

[Boat] Motions																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Arrangements [of equipment, where equipment is placed]																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Equipment [suitability of the equipment that is provided]																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Visibility																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Crew Comfort																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Safety																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Communication - internal																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Communication - external																			
O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
100%	80%	60%	40%	20%	Equal	20%	40%	60%	80%	100%									
44-Foot MLB																		**47-Foot MLB**	

Crew members would rate, using the same scale as in the OFPs for this section, the detailed questions. Once all of the OFPs and the respective detailed questions were rated, crew members were allowed to take a break before returning for small group discussions.

APPENDIX E:

Phase 2 small group discussion list

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX E: PHASE 2 SMALL GROUP DISCUSSION LIST

47-Foot MLB Project
Small Group Discussion List

LAST NAME _____ STATION _____

The following list contains items previously identified as either problems with, or desired additions to, the 47-Foot MLB. Please evaluate each item, based on your own opinion, using the following scale:

0 = not a problem; ok as it is; not needed
1 = slight problem; might like to have this added; low priority
2
3 = moderate problem; would like to have item added; moderate priority
4
5 = big problem; definitely add this item; high priority

Fill in any items that you think should be added to the list in the blank spaces provided (and on the back of each page if more space is needed).

PROBLEM OR WISH LIST AREA	SCORE
Deck	
Aft hatch to survivors' compartment	
Chocks	
Bitts	
Tow reel/tow bar	
Spotlight	
Pickup pen/grating	
Non-skid pads	
Paint	
Aft deck space	
Davits	
Scuttles	
Rub rails	
Forward handrails	
Firefighting equipment	

PROBLEM OR WISH LIST AREA	SCORE
Engine Room	
Deck plates	
Tool box	
Bilge pump indicator	
Space	
Sea strainer (checks)	
Lazarette hatch	
Fuel capacity	
Flying Bridge	
External speakers	
Radar protective door	
Microphone box	
Steering/Throttle	
Crew member seats	
Communication equipment	
Datum point (life ring & strobe)	
Protection from environment	
Instruments station	

PROBLEM OR WISH LIST AREA	SCORE
Enclosed Bridge	
Crew member seats	
Defrosters (HVAC system)	
Forward visibility	
Space	
Electronics	
GPS	
Coxswains chairs	
Navigation area	
Forward Compartment	
HVAC (Heating/ventilating/air conditioning)	
Deck plates	
Space	
Survivors' Compartment	
Deck surface	
Deck plate fasteners	
Bench seats	

PROBLEM OR WISH LIST AREA	SCORE
Habitability	
Hot cups	
Food and beverage storage	
Head	
Rest area	
HVAC system.	
Weapons storage	
Interior insulation	

APPENDIX F:

Current 47-Foot MLB compared with ideal MLB across all stations

THIS PAGE INTENTIONALLY LEFT BLANK.

Table F. Current 47-Foot MLB compared with ideal MLB across all stations.

OPERATIONAL FOCAL POINT	$\bar{X}$	SD	N
Heavy Weather Operations	**80**	14	109
Calm Weather Operations	**90**	11	112
Surf Operations	**78**	16	104
Towing (Aft)	**85**	12	112
Towing (Alongside)	**81**	16	112
Personnel Recovery	**84**	15	112
Piloting/Navigation	**81**	15	112
Mooring	**83**	14	112
Anchoring (Own Boat)	**84**	15	111
(De) Anchoring (Other Boat)	**80**	12	102
Firefighting (Own Boat)	**74**	21	111
Firefighting (Other Boat)	**56**	26	110
Alongside Operations	**81**	13	112
Helicopter Operations	**76**	18	111
Maintenance (Underway)	**79**	14	108
Maintenance (In Port)	**73**	19	109
Mission	**86**	9	110
• Search	**85**	10	109
• Rescue	**85**	11	110
• Maritime Law Enforcement	**81**	14	106
• Port Safety and Security	**82**	12	102
• Marine Environmental Response	**80**	13	102
• Recreational Boating Safety	**82**	13	106

Key: $\bar{X}$ = Mean
SD = Standard deviation
N = Number of crew members responding

Values: 0 = 47-Foot MLB none of what it should be
50 = 47-Foot MLB half of ideal
100 = 47-Foot MLB ideal

Table F-1. Station Oregon Inlet: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Heavy Weather Operations	71	25	4	74	10	7	62	28	6	69	21	17
Calm Weather Operations	84	14	5	84	7	7	81	17	6	83	13	18
Surf Operations	69	28	5	72	9	7	60	34	5	68	23	17
Towing (Aft)	94	5	5	78	13	7	67	18	6	79	17	18
Towing (Alongside)	79	19	5	82	11	7	63	10	6	75	15	18
Personnel Recovery	77	18	5	71	14	7	68	17	6	71	16	18
Piloting/Navigation	73	22	5	84	5	7	73	17	6	77	15	18
Mooring	66	26	5	79	11	7	77	14	6	75	17	18
Anchoring (Own Boat)	67	27	5	84	6	7	78	17	6	77	18	18
(De)Anchoring (Other Boat)	60	24	4	83	6	6	72	16	5	73	18	15
Firefighting (Own Boat)	89	9	5	80	9	7	61	25	6	76	19	18
Firefighting (Other Boat)	65	11	5	75	17	7	57	22	5	67	18	17
Alongside Operations	74	13	5	83	7	7	63	15	6	74	14	18
Helicopter Operations	72	21	5	77	6	7	62	12	6	71	14	18
Maintenance (Underway)	72	13	5	80	6	7	61	12	6	71	13	18
Maintenance (In Port)	57	29	5	65	15	7	65	10	6	63	18	18

Table F-1. Station Oregon Inlet: Current 47-Foot MLB compared with Ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	79	2	5	83	8	7	73	12	6	79	9	18
· Search	78	4	5	82	7	7	79	11	5	80	8	17
· Rescue	7o	4	5	81	5	7	72	10	6	76	8	18
· Maritime Law Enforcement	76	5	5	76	13	7	75	17	5	76	12	17
· Port Safety and Security	78	4	5	80	6	7	79	17	4	79	9	16
· Marine Environmental Response	74	7	5	65	14	7	74	9	4	70	11	16
· Recreational Boating Safety	77	4	5	71	10	7	76	11	5	74	9	17

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table F-2. Station Tillamook: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Heavy Weather Operations	78	18	5	76	12	12	75	14	6	76	13	23
Calm Weather Operations	94	7	5	90	8	12	93	7	6	91	7	23
Surf Operations	78	19	5	74	13	11	72	18	6	74	15	22
Towing (Aft)	90	9	5	84	14	12	84	7	6	85	12	23
Towing (Alongside)	85	9	5	89	11	12	78	13	6	85	12	23
Personnel Recovery	90	12	5	82	19	12	85	11	6	85	15	23
Piloting/Navigation	59	38	5	78	12	12	78	13	6	74	21	23
Mooring	90	9	5	83	12	12	72	13	6	82	13	23
Anchoring (Own Boat)	79	19	5	82	11	12	78	8	6	80	12	23
(De)Anchoring (Other Boat)	89	3	4	82	7	12	76	5	6	81	7	22
Firefighting (Own Boat)	86	11	5	81	20	12	63	29	6	77	22	23
Firefighting (Other Boat)	84	9	4	70	26	12	65	26	6	71	24	22
Alongside Operations	91	7	5	85	10	12	73	13	6	83	12	23
Helicopter Operations	85	20	5	77	13	12	83	4	6	80	13	23
Maintenance (Underway)	82	11	5	32	8	11	68	14	6	78	12	22
Maintenance (In Port)	78	18	5	80	8	11	73	10	6	78	11	22

Table F-2. Station Tillamook: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	89	7	5	85	7	11	85	8	6	86	7	22
· Search	85	20	5	82	11	12	77	15	6	81	14	23
· Rescue	89	7	5	83	7	12	80	15	6	84	10	23
· Maritime Law Enforcement	86	8	4	85	12	12	79	15	6	84	12	22
· Port Safety and Security	81	19	5	85	9	11	76	14	6	81	13	22
· Marine Environmental Response	86	5	4	85	9	11	76	14	6	82	11	21
· Recreational Boating Safety	87	10	5	87	9	12	80	16	6	85	11	23

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table F-3. Station Umpqua River: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Heavy Weather Operations	84	5	7	81	7	7	80	18	7	81	11	21
Calm Weather Operations	92	10	8	98	4	7	99	2	7	96	7	22
Surf Operations	81	19	8	81	10	4	79	15	7	80	16	19
Towing (Aft)	88	12	8	85	12	7	90	8	7	88	11	22
Towing (Alongside)	89	6	8	90	10	7	74	20	7	85	15	22
Personnel Recovery	88	14	8	94	5	7	77	25	7	86	18	22
Piloting/Navigation	87	10	8	81	18	7	90	11	7	86	13	22
Mooring	92	8	8	92	10	7	94	7	7	93	8	22
Anchoring (Own Boat)	82	22	8	95	8	7	83	25	6	86	20	21
(De)Anchoring (Other Boat)	89	7	7	77	17	6	83	6	6	83	12	19
Firefighting (Own Boat)	86	11	8	93	6	7	46	31	7	76	27	22
Firefighting (Other Boat)	66	23	8	49	29	7	41	29	7	53	28	22
Alongside Operations	89	5	8	86	9	7	91	8	7	88	7	22
Helicopter Operations	71	28	7	84	10	7	84	15	7	80	19	21
Maintenance (Underway)	91	9	6	94	8	6	81	18	7	88	13	19
Maintenance (In Port)	71	34	7	83	6	6	80	28	7	78	25	20

Table F-3. Station Umpqua River: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	94	6	8	89	9	7	89	11	7	91	9	22
· Search	90	7	8	92	8	7	93	7	7	92	7	22
· Rescue	92	7	8	92	9	7	76	22	7	87	16	22
· Maritime Law Enforcement	84	9	8	72	26	7	84	14	6	80	18	21
· Port Safety and Security	86	10	7	82	18	7	91	7	6	86	13	20
· Marine Environmental Response	85	10	7	73	18	7	93	8	6	83	15	20
· Recreational Boating Safety	88	10	7	83	9	7	91	7	6	87	9	20

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table F-4. Station Gloucester: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Heavy Weather Operations	86	11	4	86	7	5	86	11	5	86	9	14
Calm Weather Operations	100	0	4	90	6	5	91	7	5	93	7	14
Surf Operations	78	19	4	86	8	4	83	8	5	82	12	13
Towing (Aft)	90	8	4	92	6	5	84	15	5	89	10	14
Towing (Alongside)	84	17	4	82	18	5	73	26	5	79	20	14
Personnel Recovery	90	8	4	83	14	5	83	25	5	85	17	14
Piloting/Navigation	74	13	4	76	11	5	78	3	5	76	9	14
Mooring	91	3	4	75	10	5	83	13	5	83	11	14
Anchoring (Own Boat)	86	8	4	84	8	5	87	9	5	86	8	14
(De)Anchoring (Other Boat)	79	17	4	81	2	5	79	8	5	80	9	14
Firefighting (Own Boat)	70	9	4	77	10	5	74	22	5	74	14	14
Firefighting (Other Boat)	46	21	4	33	29	5	55	25	5	45	26	14
Alongside Operations	75	24	4	73	13	5	81	7	5	76	15	14
Helicopter Operations	79	3	4	71	11	5	80	5	5	76	8	14
Maintenance (Underway)	88	6	4	79	2	5	79	5	5	81	6	14
Maintenance (In Port)	65	22	4	47	34	5	76	15	5	63	27	14

Table F-4. Station Gloucester: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	91	11	4	88	8	5	83	7	5	87	8	14
· Search	88	9	4	87	7	5	86	8	5	87	7	14
· Rescue	85	6	4	89	2	5	82	6	5	85	5	14
· Maritime Law Enforcement	74	17	4	68	13	5	77	15	5	73	14	14
· Port Safety and Security	88	12	4	74	7	4	73	23	5	78	18	13
· Marine Environmental Response	79	14	4	73	15	4	76	25	5	76	18	13
· Recreational Boating Safety	76	19	4	73	14	5	74	26	5	74	19	14

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table F-5. Station Cape May: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N
Heavy Weather Operations	80	12	11	81	10	14	90	7	9	83	11	34
Calm Weather Operations	89	9	12	86	21	14	92	7	9	89	14	35
Surf Operations	79	15	11	84	13	14	88	8	8	83	13	33
Towing (Aft)	83	17	12	88	8	14	89	7	9	87	12	35
Towing (Alongside)	79	15	12	79	21	14	81	11	9	79	17	35
Personnel Recovery	87	10	12	88	10	14	86	10	9	87	10	35
Piloting/Navigation	87	11	12	85	10	14	84	11	9	86	10	35
Mooring	84	15	12	79	19	14	87	8	9	83	15	35
Anchoring (Own Boat)	89	8	12	91	8	14	79	20	9	87	13	35
(De)Anchoring (Other Boat)	81	7	9	84	14	14	81	10	9	82	11	32
Firefighting (Own Boat)	61	15	11	78	14	14	64	26	9	69	19	34
Firefighting (Other Boat)	52	19	12	48	29	14	49	30	9	49	25	35
Alongside Operations	79	13	12	82	14	14	84	10	9	81	13	35
Helicopter Operations	69	24	12	73	23	14	76	24	9	72	23	35
Maintenance (Underway)	81	10	12	75	22	14	83	11	9	79	16	35
Maintenance (In Port)	73	13	12	78	11	14	80	9	9	77	11	35

Table F-5. Station Cape May: Current 47-Foot MLB compared with ideal MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	83	6	11	86	6	14	89	7	9	86	7	34
· Search	84	14	12	85	6	12	89	5	9	86	10	33
· Rescue	88	10	12	87	5	12	92	7	9	88	8	33
· Maritime Law Enforcement	85	11	12	84	18	12	86	9	8	85	13	32
· Port Safety and Security	80	9	11	85	7	12	86	7	8	83	8	31
· Marine Environmental Response	81	10	11	84	8	12	86	5	9	84	8	32
· Recreational Boating Safety	82	13	12	84	18	12	87	8	8	84	14	32

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

APPENDIX G:

47-Foot MLB compared to current 44-Foot MLB across all stations

THIS PAGE INTENTIONALLY LEFT BLANK.

Table G. 47-Foot MLB compared to current 44-Foot MLB across all stations.

OPERATIONAL FOCAL POINT	$\bar{X}$	SD	N
Heavy Weather Operations	1.5	0.4	102
Calm Weather Operations	1.7	0.3	102
Surf Operations	1.4	0.4	97
Towing (Aft)	1.6	0.4	102
Towing (Alongside)	1.4	0.5	102
Personnel Recovery	1.6	0.4	102
Piloting/Navigation	1.7	0.3	101
Mooring	1.3	0.4	101
Anchoring (Own Boat)	1.5	0.4	101
(De) Anchoring (Other Boat)	1.3	0.3	100
Firefighting (Own Boat)	1.2	0.4	102
Firefighting (Other Boat)	0.9	0.4	102
Alongside Operations	1.4	0.4	102
Helicopter Operations	1.3	0.4	102
Maintenance (Underway)	1.3	0.4	101
Maintenance (In Port)	1.3	0.4	100
Mission	1.7	0.2	100
Search	1.7	0.2	102
Rescue	1.7	0.2	102
Maritime Law Enforcement	1.5	0.4	100
Port Safety and Security	1.4	0.4	99
Marine Environmental Response	1.4	0.4	99
Recreational Boating Safety	1.5	0.4	101

Key: $\bar{X}$ = Mean
SD = Standard deviation
N = Number of crew members responding

Values: 0.5 = 47-Foot MLB 1/2 as good as 44-Foot MLB
1.0 = 47-Foot MLB equal to 44-Foot MLB
2.0 = 47-Foot MLB twice as good as 44-Foot MLB

Table G-1. Station Oregon Inlet: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Heavy Weather Operations	1.3	0.5	5	1.4	0.4	7	1.1	0.4	6	1.3	0.4	18
Calm Weather Operations	1.9	0.1	5	1.6	0.3	7	1.4	0.5	6	1.6	0.4	18
Surf Operations	1.3	0.4	5	1.0	0.3	7	1.1	0.4	6	1.1	0.4	18
Towing (Aft)	1.8	0.3	5	1.4	0.4	7	1.1	0.2	6	1.4	0.4	18
Towing (Alongside)	1.4	0.7	5	1.5	0.4	7	1.0	0.2	6	1.3	0.5	18
Personnel Recovery	1.7	0.3	5	1.1	0.4	7	1.3	0.4	6	1.3	0.4	18
Piloting/Navigation	1.7	0.4	5	1.8	0.2	7	1.6	0.3	6	1.7	0.3	18
Mooring	1.1	0.4	5	1.1	0.3	7	1.0	0.2	6	1.1	0.3	18
Anchoring (Own Boat)	1.4	0.6	5	1.4	0.3	7	1.5	0.4	6	1.4	0.4	18
(De)Anchoring (Other Boat)	1.1	0.4	5	1.2	0.2	7	1.1	0.2	5	1.2	0.3	17
Firefighting (Own Boat)	1.4	0.6	5	1.3	0.3	7	1.2	0.4	6	1.3	0.4	18
Firefighting (Other Boat)	0.8	0.2	5	1.1	0.3	7	0.9	0.2	6	0.9	0.3	18
Alongside Operations	1.3	0.6	5	1.2	0.1	7	1.1	0.2	6	1.2	0.3	18
Helicopter Operations	1.7	0.4	5	1.3	0.4	7	1.2	0.2	6	1.4	0.4	18
Maintenance (Underway)	1.2	0.4	5	1.2	0.3	7	1.0	0.2	6	1.2	0.3	18
Maintenance (In Port)	1.4	0.4	5	1.0	0.1	7	1.1	0.2	6	1.1	0.3	18

Table G-1. Station Oregon Inlet: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Students		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	1.8	0.1	5	1.4	0.1	7	1.4	0.2	6	1.5	0.2	18
· Search	1.7	0.1	5	1.5	0.2	7	1.5	0.3	6	1.6	0.2	18
· Rescue	1.7	0.1	5	1.5	0.1	7	1.5	0.3	6	1.5	0.2	18
· Maritime Law Enforcement	1.4	0.6	5	1.3	0.3	7	1.4	0.3	6	1.3	0.4	18
· Port Safety and Security	1.4	0.4	5	1.3	0.3	7	1.3	0.4	6	1.3	0.3	18
· Marine Environmental Response	1.5	0.3	5	1.1	0.3	7	1.3	0.3	6	1.3	0.3	18
· Recreational Boating Safety	1.4	0.5	5	1.3	0.3	7	1.4	0.4	6	1.4	0.4	18

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table G-2. Station Tillamook: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			[illegible]		
	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N	[illegible]	[illegible]	[illegible]
Heavy Weather Operations	1.2	0.4	5	1.4	0.4	12	1.4	0.4	6	1.4	0.5	23
Calm Weather Operations	1.6	0.4	5	1.8	0.3	12	1.9	0.1	6	1.8	0.3	23
Surf Operations	1.2	0.4	5	1.2	0.4	12	1.5	0.3	6	1.3	0.4	23
Towing (Aft)	1.6	0.4	5	1.4	0.4	12	1.6	0.3	6	1.5	0.4	23
Towing (Alongside)	1.1	0.6	5	1.6	0.4	12	1.5	0.3	6	1.5	0.4	23
Personnel Recovery	1.7	0.4	5	1.6	0.4	12	1.4	0.5	6	1.6	0.4	23
Piloting/Navigation	1.6	0.6	5	1.6	0.3	12	1.4	0.5	6	1.6	0.4	23
Mooring	1.1	0.4	5	1.5	0.4	12	1.2	0.3	6	1.3	0.4	23
Anchoring (Own Boat)	1.5	0.5	5	1.5	0.4	12	1.3	0.4	6	1.5	0.4	23
(De)Anchoring (Other Boat)	1.2	0.4	5	1.2	0.3	12	1.3	0.4	6	1.2	0.3	23
Firefighting (Own Boat)	1.3	0.5	5	1.4	0.5	12	1.1	0.5	6	1.3	0.5	23
Firefighting (Other Boat)	1.2	0.6	5	1.2	0.6	12	1.1	0.5	6	1.1	0.5	23
Alongside Operations	1.3	0.4	5	1.6	0.3	12	1.1	0.2	6	1.4	0.4	23
Helicopter Operations	1.5	0.5	5	1.2	0.4	12	1.3	0.4	6	1.3	0.4	23
Maintenance (Underway)	1.5	0.5	5	1.2	0.3	12	1.2	0.3	6	1.3	0.4	23
Maintenance (In Port)	1.6	0.4	5	1.3	0.4	11	1.0	0.3	6	1.3	0.4	22

Table G-2. Station Tillamook: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	1.7	0.2	5	1.7	0.2	11	1.6	0.3	6	1.6	0.3	22
· Search	1.7	0.4	5	1.6	0.3	12	1.6	0.3	6	1.6	0.3	23
· Rescue	1.6	0.4	5	1.6	0.3	12	1.6	0.3	6	1.6	0.3	23
· Maritime Law Enforcement	1.4	0.4	4	1.6	0.3	12	1.5	0.4	6	1.5	0.3	22
· Port Safety and Security	1.5	0.4	5	1.5	0.3	12	1.4	0.4	6	1.5	0.3	23
· Marine Environmental Response	1.4	0.5	4	1.4	0.4	12	1.3	0.4	6	1.4	0.4	22
· Recreational Boating Safety	1.5	0.5	5	1.6	0.3	12	1.5	0.3	6	1.5	0.3	23

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table G-3. Station Umpqua River: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			[illegible]		
	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N
Heavy Weather Operations	1.7	0.3	8	1.5	0.3	7	1.4	0.5	7	1.6	0.4	22
Calm Weather Operations	1.7	0.4	8	1.9	0.2	7	1.8	0.4	7	1.8	0.3	22
Surf Operations	1.5	0.4	8	1.5	0.4	6	1.5	0.5	6	1.5	0.4	20
Towing (Aft)	1	0.4	8	1.7	0.2	7	1.8	0.3	7	1.7	0.3	22
Towing (Alongside)	1.5	0.5	8	1.6	0.5	7	1.3	0.5	7	1.4	0.5	22
Personnel Recovery	1.7	0.3	8	1.8	0.1	7	1.3	0.6	7	1.6	0.5	22
Piloting/Navigation	1.8	0.3	8	1.9	0.2	7	1.8	0.3	7	1.8	0.3	22
Mooring	1.4	0.4	8	1.3	0.5	7	1.5	0.5	7	1.4	0.4	22
Anchoring (Own Boat)	1.4	0.6	8	1.4	0.4	7	1.5	0.5	7	1.4	0.5	22
(De)Anchoring (Other Boat)	1.1	0.3	8	1.2	0.2	7	1.2	0.2	7	1.2	0.2	22
Firefighting (Own Boat)	1.2	0.3	8	1.4	0.4	7	0.8	0.3	7	1.1	0.4	22
Firefighting (Other Boat)	0.9	0.5	8	0.9	0.5	7	0.6	0.1	7	0.8	0.4	22
Alongside Operations	1.5	0.3	8	1.5	0.5	7	1.4	0.5	7	1.4	0.4	22
Helicopter Operations	1.3	0.6	8	1.5	0.5	7	1.4	0.4	7	1.4	0.5	22
Maintenance (Underway)	1.4	0.4	7	1.4	0.4	7	1.5	0.4	7	1.4	0.4	21
Maintenance (In Port)	1.4	0.5	8	1.1	0.2	7	1.1	0.2	6	1.2	0.3	21

Table G-3. Station Umpqua River: 47-Foot MLB compared to current 44-Foot MLB

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	1.8	0.1	8	1.7	0.2	7	1.7	0.3	6	1.7	0.2	21
· Search	1.8	0.2	8	1.8	0.2	7	1.8	0.2	7	1.8	0.2	22
· Rescue	1.8	0.1	8	1.7	0.2	7	1.7	0.3	7	1.8	0.2	22
· Maritime Law Enforcement	1.6	0.4	8	1.3	0.4	7	1.5	0.3	7	1.5	0.4	22
· Port Safety and Security	1.4	0.5	7	1.2	0.2	7	1.5	0.4	7	1.4	0.4	21
· Marine Environmental Response	1.6	0.4	7	1.2	0.3	7	1.6	0.3	7	1.5	0.4	21
· Recreational Boating Safety	1.5	0.4	8	1.3	0.4	7	1.7	0.3	7	1.5	0.4	22

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table G-4. Station Gloucester: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Operations		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Heavy Weather Operations	1.7	0.3	4	1.7	0.1	5	1.5	0.5	5	1.6	0.3	14
Calm Weather Operations	1.8	0.2	4	1.7	0.2	5	1.9	0.1	5	1.8	0.2	14
Surf Operations	1.7	0.2	4	1.8	0.2	3	1.5	0.5	5	1.6	0.4	12
Towing (Aft)	1.8	0.3	4	1.7	0.5	5	1.7	0.2	5	1.7	0.3	14
Towing (Alongside)	1.2	0.5	4	1.8	0.2	5	1.4	0.5	5	1.5	0.5	14
Personnel Recovery	1.6	0.3	4	1.9	0.2	5	1.6	0.4	5	1.7	0.3	14
Piloting/Navigation	1.6	0.4	4	1.9	0.1	5	1.7	0.4	4	1.7	0.3	13
Mooring	1.4	0.3	4	1.4	0.4	5	1.3	0.6	4	1.4	0.4	13
Anchoring (Own Boat)	1.8	0.3	4	1.6	0.4	5	1.7	0.3	4	1.7	0.3	13
(De)Anchoring (Other Boat)	1.5	0.3	4	1.4	0.3	5	1.5	0.5	5	1.5	0.3	14
Firefighting (Own Boat)	1.1	0.3	4	1.6	0.4	5	1.6	0.4	5	1.5	0.4	14
Firefighting (Other Boat)	0.9	0.4	4	0.8	0.2	5	1.0	0.4	5	0.9	0.3	14
Alongside Operations	1.4	0.6	4	1.6	0.2	5	1.6	0.4	5	1.6	0.4	14
Helicopter Operations	1.1	0.3	4	1.3	0.3	5	1.7	0.3	5	1.4	0.4	14
Maintenance (Underway)	1.4	0.4	4	1.2	0.2	5	1.4	0.5	5	1.3	0.4	14
Maintenance (In Port)	1.1	0.3	4	1.1	0.4	5	1.4	0.3	5	1.2	0.3	14

Table G-4. Station Gloucester: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Enlisted		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	1.9	0.1	4	1.9	0.1	5	1.7	0.3	5	1.8	0.2	14
· Search	1.6	0.2	4	1.9	0.1	5	1.8	0.2	5	1.8	0.2	14
· Rescue	1.8	0.1	4	1.9	0.1	5	1.7	0.4	5	1.8	0.2	14
· Maritime Law Enforcement	1.4	0.5	4	1.5	0.2	5	1.6	0.4	5	1.5	0.4	14
· Port Safety and Security	1.6	0.5	4	1.7	0.3	5	1.5	0.5	5	1.6	0.4	14
· Marine Environmental Response	1.6	0.3	4	1.5	0.4	5	1.5	0.6	5	1.5	0.4	14
· Recreational Boating Safety	1.3	0.5	4	1.6	0.3	5	1.6	0.4	5	1.5	0.4	14

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

Table G-5. Station Cape May: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			[illegible]		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Heavy Weather Operations	1.4	0.4	10	1.5	0.2	10	1.6	0.4	5	1.5	0.4	25
Calm Weather Operations	1.7	0.4	10	1.7	0.2	10	1.7	0.4	5	1.7	0.3	25
Surf Operations	1.3	0.5	10	1.3	0.3	10	1.5	0.6	4	1.3	0.4	24
Towing (Aft)	1.5	0.4	10	1.5	0.3	10	1.8	0.2	5	1.6	0.4	25
Towing (Alongside)	1.4	0.3	10	1.6	0.4	10	1.5	0.6	5	1.5	0.4	25
Personnel Recovery	1.7	0.2	10	1.5	0.3	10	1.6	0.5	5	1.6	0.3	25
Piloting/Navigation	1.9	0.1	10	1.7	0.3	10	1.8	0.2	5	1.8	0.2	25
Mooring	1.5	0.4	10	1.3	0.3	10	1.7	0.2	5	1.4	0.4	25
Anchoring (Own Boat)	1.8	0.2	10	1.6	0.3	10	1.7	0.4	5	1.7	0.3	25
(De)Anchoring (Other Boat)	1.5	0.3	10	1.3	0.3	9	1.4	0.4	5	1.4	0.4	24
Firefighting (Own Boat)	0.9	0.4	10	1.1	0.3	10	1.0	0.5	5	1.0	0.4	25
Firefighting (Other Boat)	0.8	0.3	10	0.9	0.3	10	0.8	0.6	5	0.8	0.4	25
Alongside Operations	1.6	0.3	10	1.5	0.3	10	1.7	0.3	5	1.6	0.3	25
Helicopter Operations	1.4	0.5	10	1.1	0.3	10	1.6	0.6	5	1.3	0.5	25
Maintenance (Underway)	1.3	0.4	10	1.2	0.4	10	1.6	0.4	5	1.3	0.4	25
Maintenance (In Port)	1.3	0.4	10	1.4	0.3	10	1.8	0.2	5	1.4	0.3	25

Table G-5. Station Cape May: 47-Foot MLB compared to current 44-Foot MLB.

Operational Focal Point	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Mission	1.6	0.3	10	1.7	0.2	10	1.8	0.1	5	1.7	0.2	25
· Search	1.7	0.2	10	1.7	0.2	10	1.9	0.1	5	1.7	0.2	25
· Rescue	1.7	0.2	10	1.6	0.2	10	1.8	0.1	5	1.7	0.2	25
· Maritime Law Enforcement	1.5	0.3	9	1.5	0.3	10	1.8	0.1	5	1.5	0.3	24
· Port Safety and Security	1.5	0.3	8	1.3	0.3	10	1.7	0.4	5	1.5	0.3	23
· Marine Environmental Response	1.4	0.4	9	1.3	0.3	10	1.8	0.2	5	1.4	0.4	24
· Recreational Boating Safety	1.4	0.4	9	1.3	0.4	10	1.7	0.4	5	1.4	0.4	24

$\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman Apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman Apprentices were included as Engineers.

APPENDIX H:

Evaluation of problem or wish list items across all stations

THIS PAGE INTENTIONALLY LEFT BLANK.

Table H. Evaluation of problem or wish list items across all stations.

PROBLEM OR WISH LIST ITEM	$\bar{X}$	SD	N
DECK			
Aft Hatch	**0.9**	1.3	120
Chocks	**1.8**	1.8	120
Bitts	**1.4**	1.7	120
Tow Reel/Tow Bitt	**0.9**	1.5	120
Spot Light	**2.1**	1.9	120
Pickup Port/Grating	**2.1**	1.8	120
Non-skid Pads	**3.0**	2.0	120
Paint	**2.7**	2..0	120
Aft Deck Space	**1.0**	1.4	120
D-rings	**1.4**	1.7	120
Handholds	**1.5**	1.7	120
Rub Rails	**1.2**	1.6	120
Forward Hand Rails	**1.4**	1.7	119
Firefighting Equipment	**3.6**	1.8	120
ENGINE ROOM			
Deck Plates	**2.2**	2.0	119
Tool Box	**1.3**	1.8	119
Bilge Pump indicator	**1.8**	2.1	117
Space	**1.2**	1.6	119
Sea Strainer (Checks)	**1.9**	1.9	117
Lazarette Hatch	**3.2**	2.0	119
Fuel Capacity	**1.6**	1.9	119
FLYING BRIDGE			
External Speakers	**1.9**	1.9	119
Radar Protective Door	**1.8**	1.8	119
Microphone Box	**2.5**	2.0	119
Steering/Throttle	**2.6**	2.0	118
Crew Member Seats	**1.4**	1.7	119
Communication Equipment	**2.1**	1.8	118
Datum Point	**2.2**	1.9	119
Protection from Environment	**1.7**	1.7	119
Instrument Station	**1.4**	1.7	117
ENCLOSED BRIDGE			
Crew Member Seats	**2.9**	2.0	119
Defrosters (HVAC)	**1.3**	1.8	119

Table H. Evaluation of problem or wish list items across all stations.

PROBLEM OR WISH LIST ITEM	$\bar{X}$	SD	N
Forward Visibility	**0.9**	1.2	119
Space	**2.1**	1.6	119
Electronics	**1.7**	1.7	119
Global Positioning System (GPS)	**3.1**	2.2	114
Coxswains' Chairs	**1.2**	1.7	119
Navigation Area	**2.7**	1.8	119
FORWARD COMPARTMENT			
HVAC	**1.8**	2.0	118
Deck Plates	**2.4**	2.0	120
Use of Space	**0.6**	1.3	120
SURVIVORS' COMPARTMENT			
Deck Surface	**2.2**	1.9	120
Deck Plate Fasteners	**3.1**	2.0	120
Bench Seats	**1.3**	1.7	120
HABITABILITY			
Hot Cups	**1.2**	1.9	120
Food and Beverage Storage	**2.1**	2.1	120
Head	**1.9**	2.0	119
Area to Rest	**1.0**	1.4	120
HVAC System	**1.4**	1.8	119
Weapons Storage	**2.1**	2.1	118
Interior Insulation	**2.5**	2.1	120

Key: $\bar{X}$ = Mean
SD = Standard deviation
N = Number of crew members responding

Values: 0 = not a problem; ok as it is; not needed
1 = slight problem; might like to have this added; low priority
2
3 = moderate problem; would like to have item added; moderate priority
4
5 = big problem; definitely add this item; high priority

Table H-1. Station Oregon Inlet: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
DECK												
Aft Hatch	1.3	1.8	6	2.3	1.8	8	1.0	1.1	6	1.6	1.6	20
Chocks	2.5	2.1	6	1.8	1.7	8	2.2	2.1	6	2.1	1.9	20
Bitts	1.7	1.9	6	1.5	1.8	8	1.0	1.3	6	1.4	1.6	20
Tow Reel/Tow Bitt	1.3	2.1	6	1.8	2.1	8	1.8	1.5	6	1.7	1.8	20
Spot Light	3.7	1.5	6	3.8	1.6	8	4.3	1.6	6	3.9	1.5	20
Pickup Port/Grating	3.2	1.8	6	3.4	1.7	8	2.7	1.9	6	3.1	1.7	20
Non-skid Pads	2.7	2.3	6	2.3	2.0	8	1.7	1.2	6	2.2	1.9	20
Paint	1.7	1.9	6	2.0	1.3	8	1.7	1.6	6	1.8	1.5	20
Aft Deck Space	1.5	1.5	6	1.5	1.1	8	2.0	2.0	6	1.7	1.5	20
D-rings	0.7	1.6	6	0.9	1.5	8	1.7	2.0	6	1.1	1.6	20
Handholds	2.2	1.9	6	1.8	1.8	8	1.5	1.6	6	1.8	1.7	20
Rub Rails	1.0	1.7	6	1.6	1.6	8	0.7	1.2	6	1.2	1.5	20
Forward Hand Rails	1.8	1.8	6	0.6	1.1	8	0.2	0.4	6	0.9	1.3	20
Firefighting Equipment	1.8	1.6	6	1.6	2.0	8	3.2	2.2	6	2.2	2.0	20
ENGINE ROOM												
Deck Plates	1.3	1.8	6	1.3	1.5	8	2.8	2.0	6	1.8	1.8	20
Tool Box	1.5	1.6	6	1.8	1.8	8	2.5	2.7	6	1.9	2.0	20
Bilge Pump Indicator	1.0	2.0	6	1.1	1.6	8	2.8	2.3	5	1.5	2.0	19
Space	1.2	1.2	6	1.1	1.6	8	3.0	1.8	6	1.7	1.7	20
Sea Strainer (Checks)	0.3	0.5	6	1.6	2.3	8	3.2	2.2	6	1.7	2.2	20
Lazarette Hatch	3.8	1.6	6	3.8	1.6	8	4.5	0.8	6	4.0	1.4	20

Table H-1. Station Oregon Inlet: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Fuel Capacity	1.3	1.8	6	0.9	1.5	8	2.5	2.3	6	1.5	1.8	20
FLYING BRIDGE												
External Speakers	2.2	2.0	6	2.5	1.2	8	1.8	1.5	6	2.2	1.5	20
Radar Protective Door	1.8	1.6	6	2.4	1.5	8	1.8	1.9	6	2.1	1.6	20
Microphone Box	1.5	2.0	6	3.0	1.2	8	2.2	1.9	6	2.3	1.7	20
Steering/Throttle	1.6	1.5	5	1.9	2.2	8	3.0	1.9	6	2.2	1.9	19
Crew Member Seats	2.5	2.7	6	0.5	0.9	8	0.8	1.2	6	1.2	1.9	20
Communication Equipment	1.2	1.6	5	1.4	1.5	8	1.7	2.3	6	1.4	1.7	19
Datum Point Marker	4.7	0.5	6	3.1	1.1	8	3.2	1.7	6	3.6	1.4	20
Protection from Environment	2.8	1.7	6	3.9	0.8	8	3.5	1.9	6	3.5	1.5	20
Instrument Station	2.0	2.2	6	1.8	1.9	8	2.3	1.4	6	2.0	1.8	20
ENCLOSED BRIDGE												
Crew Member Seats	4.2	2.0	6	3.4	1.7	8	3.7	2.0	6	3.7	1.8	20
Defroster (HVAC)	2.7	1.9	6	1.6	1.9	8	1.3	1.2	6	1.9	1.7	20
Forward Visibility	1.8	1.5	6	1.4	1.4	8	1.7	1.0	6	1.6	1.3	20
Space	3.0	1.8	6	2.3	1.6	8	3.5	1.0	6	2.9	1.5	20
Electronics	1.2	1.3	6	0.9	1.1	8	1.5	1.9	6	1.2	1.4	20
GPS	3.0	2.4	6	3.8	1.8	8	2.6	2.5	5	3.2	2.1	19
Coxswains' Chairs	0.5	1.2	6	1.0	1.8	8	0.5	0.8	6	0.7	1.3	20
Navigation Area	3.2	2.1	6	2.8	1.7	8	3.2	1.3	6	3.0	1.7	20
FORWARD COMPARTMENT												
HVAC	2.0	1.6	5	0.8	1.2	8	1.0	1.5	6	1.2	1.4	19

Table H-1. Station Oregon Inlet: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Deck Plates	2.0	2.3	6	1.8	1.3	8	1.8	2.1	6	1.9	1.8	20
Use of Space	2.2	1.8	6	1.0	1.9	8	0.8	1.3	6	1.3	1.8	20
SURVIVORS' COMPARTMENT												
Deck Surface	2.3	2.2	6	2.5	1.5	8	2.8	2.3	6	2.6	1.9	20
Deck Plate Fasteners	3.3	1.4	6	2.4	2.4	8	3.8	2.0	6	3.1	2.0	20
Bench Seats	2.8	1.9	6	1.1	1.4	8	1.0	2.0	6	1.6	1.8	20
HABITABILITY												
Hot Cups	0.0	0.0	6	0.6	1.8	8	1.5	2.1	6	0.7	1.6	20
Food and Beverage Storage	2.8	1.7	6	1.0	1.6	8	2.3	2.6	6	2.0	2.0	20
Head	2.7	2.3	6	1.5	1.2	8	2.6	2.1	5	2.2	1.8	19
Area to Rest	1.7	1.6	6	1.5	1.8	8	1.7	1.5	6	1.6	1.6	20
HVAC System	1.3	2.2	6	1.8	1.0	8	0.8	1.3	6	1.4	1.5	20
Weapons Storage	2.7	2.3	6	2.3	2.1	8	2.8	2.1	6	2.5	2.1	20
Interior Insulation	1.7	2.0	6	1.5	1.7	8	1.8	2.1	6	1.7	1.8	20

Scale: 0 = not a problem; ok as it is; not needed
1 = slight problem; might like to have this added; low priority
2
3 = moderate problem; would like to have item added; moderate priority
4
5 = big problem; definitely add this item; high priority

Key: $\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman apprentices were included as Engineers.

Table H-2. Station Tillamook: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N
DECK												
Aft Hatch	2.0	2.1	5	1.6	1.5	12	1.0	1.3	6	1.5	1.6	23
Chocks	2.8	1.9	5	1.1	2.0	12	3.3	2.6	6	2.0	2.3	23
Bitts	1.0	2.2	5	1.7	1.8	12	2.3	1.8	6	1.7	1.8	23
Tow Reel/Tow Bitt	0.6	1.3	5	0.8	1.6	12	0.8	2.0	6	0.7	1.6	23
Spot Light	0.2	0.4	5	1.3	1.2	12	1.0	2.0	6	1.0	1.4	23
Pickup Port/Grating	1.6	2.3	5	2.8	1.9	12	3.3	2.1	6	2.7	2.0	23
Non-skid Pads	1.0	2.2	5	1.7	1.4	12	1.0	1.1	6	1.1	1.5	23
Paint	2.8	2.6	5	3.7	1.9	12	3.2	2.1	6	3.3	2.1	23
Aft Deck Space	0.6	1.3	5	1.4	1.7	12	0.3	0.8	6	1.0	1.5	23
D-rings	0.8	1.8	5	2.5	2.2	12	1.3	2.0	6	1.8	2.1	23
Handholds	2.2	2.3	5	1.2	1.5	12	2.0	2.3	6	1.6	1.9	23
Rub Rails	0.0	0.0	5	2.5	2.2	12	0.3	0.8	6	1.4	2.0	23
Forward Hand Rails	1.0	2.2	5	1.9	1.9	11	0.8	1.3	6	1.4	1.8	22
Firefighting Equipment	0.6	1.3	5	3.5	1.9	12	3.7	2.0	6	2.9	2.2	23
ENGINE ROOM												
Deck Plates	0.0	0.0	5	1.8	2.0	12	3.5	2.1	6	8	2.1	23
Tool Box	0.0	0.0	5	1.1	1.4	12	0.8	2.0	6	0.8	1.4	23
Bilge Pump Indicator	1.0	2.2	5	2.3	2.1	12	4.2	2.0	6	2.5	2.3	23
Space	0.0	0.0	5	1.9	1.9	12	2.2	1.9	6	1.6	1.8	23
Sea Strainer (Checks)	0.4	0.9	5	2.3	2.1	12	3.3	2.1	6	2.1	2.1	23
Lazarette Hatch	3.8	1.1	5	3.3	2.1	12	5	0.0	6	3.9	1.7	23

Table H-2. Station Tillamook: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N
Fuel Capacity	0.0	0.0	5	2.3	2.3	12	2.8	2.5	6	2.0	2.3	23
FLYING BRIDGE												
External Speakers	0.0	0.0	5	2.5	2.0	12	2.0	2.3	6	2.0	2.1	23
Radar Protective Door	1.8	2.5	5	3.3	1.5	12	1.3	1.8	6	2.5	2.0	23
Microphone Box	1.0	2.2	5	4.2	0.9	12	1.8	2.5	6	2.9	2.2	23
Steering/Throttle	2.0	2.1	5	3.9	1.6	12	3.3	2.1	6	3.3	1.9	23
Crew Member Seats	1.0	2.2	5	1.6	1.4	12	1.8	2.5	6	5	1.9	23
Communication Equipment	0.6	1.3	5	2.1	1.5	12	2.5	1.4	6	1.9	1.5	23
Datum Point Marker	2.8	1.8	5	1.3	1.7	12	1.7	2.6	6	1.7	2.0	23
Protection from Environment	0.4	0.9	5	1.3	1.5	12	0.5	1.2	6	0.9	1.3	23
Instrument Station	0.2	0.4	5	1.4	2.0	12	1.3	2.2	6	1.1	1.8	23
ENCLOSED BRIDGE												
Crew Member Seats	2.0	2.7	5	2.8	2.0	12	3.5	1.4	6	2.8	2.0	23
Defroster (HVAC)	0.0	0.0	5	2.4	2.1	12	2.0	2.4	6	1.8	2.1	23
Forward Visibility	0.0	0.0	5	0.8	1.3	12	0.0	0.0	6	0.4	1.0	23
Space	2.6	1.8	5	2.4	1.7	12	2.7	2.0	6	2.5	1.7	23
Electronics	0.6	1.3	5	2.8	2.2	12	2.5	1.4	6	2.3	2.0	23
GPS	2.5	2.9	4	1.3	1.5	12	2.3	2.6	6	3.4	2.2	22
Coxswains' Chairs	0.6	1.3	5	1.5	1.9	12	1.8	1.8	6	1.4	1.8	23
Navigation Area	4.4	0.9	5	4.3	0.9	12	4.2	1.3	6	4.3	1.0	23

Table H-2. Station Tillamook: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING														
	Seamen				Boatswain's Mates				Engineers				Station		
	$\bar{X}$	SD	N		$\bar{X}$	SD	N		$\bar{X}$	SD	N		$\bar{X}$	SD	N
FORWARD COMPARTMENT															
HVAC	0.0	0.0	5		2.3	2.3	12		2.0	2.4	6		1.7	2.2	23
Deck Plates	0.6	1.3	5		2.3	1.9	12		8	1.9	6		8	1.9	23
Use of Space	1.0	2.2	5		1.0	1.7	12		5	1.2	6		0.9	1.6	23
SURVIVORS' COMPARTMENT															
Deck Surface	2.0	2.7	5		3.2	1.9	12		2.2	1	6		2.6	2.1	23
Deck Plate Fasteners	3.4	2.1	5		3.3	2.1	12		4.3	1.6	6		3.5	2.0	23
Bench Seats	0.0	0.0	5		2.8	1.9	12		2.3	2.6	6		2.0	2.1	23
HABITABILITY															
Hot Cups	1.4	2.2	5		2.3	2.1	12		2.2	2.5	6		2.1	2.2	23
Food and Beverage Storage	1.4	2.2	5		2.1	2.0	12		2.5	2.7	6		2.0	2.2	23
Head	1.0	2.2	5		1.8	1.9	12		0.8	2.0	6		1.4	2.0	23
Area to Rest	0.0	0.0	5		1.3	1.6	12		1.3	2.2	6		1.0	1.6	23
HVAC System	0.0	0.0	5		2.7	2.0	12		1.2	2.0	6		1.7	2.0	23
Weapons Storage	0.0	0.0	5		1.9	2.2	12		0.7	1.2	6		1.2	1.9	23
Interior Insulation	0.0	0.0	5		3.1	2.2	12		0.5	1.2	6		1.7	2.2	23

Scale: 0 = not a problem; ok as it is; not needed
1 = slight problem; might like to have this added, low priority
2
3 = moderate problem; would like to have item added; moderate priority
4
5 = big problem; definitely add this item; high priority

Key: $\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman apprentices were included as Engineers.

Table H-3. Station Umpqua River: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N
DECK												
Aft Hatch	1.0	1.3	8	0.1	0.4	7	0.7	1.3	7	0.6	1.1	22
Chocks	0.6	1.1	8	1.9	1.8	7	1.6	1.8	7	1.3	1.6	22
Bitts	1.3	2.1	8	1.4	1.6	7	1.3	1.9	7	1.3	1.8	22
Tow Reel/Tow Bitt	1.1	1.6	8	0.1	0.4	7	0.7	1.5	7	0.7	1.3	22
Spot Light	0.8	1.5	8	0.0	0.0	7	1.9	1.6	7	0.9	1.4	22
Pickup Port/Grating	1.4	1.5	8	0.9	1.1	7	1.6	2.1	7	1.3	1.5	22
Non-skid Pads	4.3	1.4	8	4.0	1.7	7	4.0	1.0	7	4.1	1.3	22
Paint	2.9	2.0	8	4.9	0.4	7	3.6	1.8	7	3.7	1.7	22
Aft Deck Space	0.5	0.9	8	0.6	1.5	7	0.9	1.2	7	0.6	1.2	22
D-rings	0.3	0.7	8	0.4	0.8	7	1.6	1.6	7	0.7	1.2	22
Handholds	1.1	1.6	8	1.4	2.0	7	1.0	1.7	7	1.2	1.7	22
Rub Rails	0.6	1.2	8	2.7	2.0	7	0.4	0.8	7	1.2	1.7	22
Forward Hand Rails	1.9	1.7	8	2.4	2.3	7	3.1	2.3	7	2.5	2.1	22
Firefighting Equipment	2.8	2.1	8	4.6	0.8	7	4.8	0.8	7	4.0	1.6	22
ENGINE ROOM												
Deck Plates	1.6	2.3	8	2.0	2.1	7	3.1	2.0	7	2.2	2.1	22
Tool Box	0.9	1.2	8	0.9	1.5	7	2.6	1.8	7	1.4	1.7	22
Bilge Pump Indicator	0.0	0.0	7	1.9	2.4	7	3.6	1.7	7	1.8	2.2	21
Space	0.6	1.8	8	1.6	2.1	7	1.0	1.7	7	1.0	1.8	22
Sea Strainer (Checks)	0.3	0.8	7	1.0	1.9	7	3.4	1.3	7	1.6	1.9	21
Lazarette Hatch	1.3	1.9	8	4.1	1.9	7	4.0	1.8	7	3.0	2.3	22

Table H-3. Station Umpqua River: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N	$\bar{x}$	SD	N
Fuel Capacity	0.5	0.8	8	2.1	2.3	7	1.0	1.1	7	1.2	1.7	22
FLYING BRIDGE												
External Speakers	2.1	2.1	7	1.9	1.9	7	2.9	2.4	7	2.3	2.1	21
Radar Protective Door	1.1	1.9	7	1.9	2.0	7	2.3	2.1	7	1.8	2.0	21
Microphone Box	2.9	2.4	7	3.9	1.2	7	3.1	1.8	7	3.3	1.8	21
Steering/Throttle	1.9	2.4	7	3.1	2.3	7	3.4	1.8	7	2.8	2.2	21
Crew Member Seats	1.7	1.7	7	2.9	2.4	7	0.6	0.8	7	1.7	1.9	21
Communication Equipment	2.0	1.5	7	1.9	1.5	7	1.6	stet	7	1.8	1.4	21
Datum Point Marker	3.4	1.6	7	1.9	2.1	7	3.3	1.7	7	2.9	1.9	21
Protection from Environment	1.0	1.4	7	1.4	2.1	7	1.4	1.6	7	1.3	1.7	21
Instrument Station	1.1	1.5	7	1.3	1.9	7	1.3	1.9	7	1.2	1.7	21
ENCLOSED BRIDGE												
Crew Member Seats	3.3	2.0	7	2.1	2.3	7	1.1	1.3	7	2.2	2.0	21
Defroster (HVAC)	0.4	1.1	7	0.9	1.9	7	0.4	0.5	7	0.6	1.2	21
Forward Visibility	1.0	1.3	7	0.3	0.5	7	0.9	0.9	7	0.7	1.0	21
Space	1.6	1.6	7	1.4	1.4	7	1.6	1.4	7	1.5	1.4	21
Electronics	0.4	0.8	7	2.3	1.7	7	1.3	1.8	7	1.3	1.6	21
GPS	2.8	2.5	6	4.9	0.4	7	3.7	2.2	7	3.9	2.0	20
Coxswains' Chairs	0.3	0.5	7	2.7	2.0	7	1.0	1.4	7	1.3	1.7	21
Navigation Area	3.7	1.5	7	3.1	1.8	7	1.0	1.2	7	2.6	1.9	21
FORWARD COMPARTMENT												
HVAC	0.4	0.8	7	1.4	2.1	7	0.9	1.5	7	0.9	1.5	21

Table H-3. Station Umpqua River: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Deck Plates	3.3	2.2	8	4.3	1.9	7	4.1	1.5	7	3.9	1.9	22
Use of Space	0.4	0.7	8	1.4	2.1	7	0.3	0.5	7	0.7	1.4	22
SURVIVORS' COMPARTMENT												
Deck Surface	1.9	2.1	8	2.3	2.1	7	1.6	1.6	7	1.9	1.9	22
Deck Plate Fasteners	3.4	2.2	8	3.0	2.2	7	4.7	0.5	7	3.7	1.9	22
Bench Seats	0.4	0.5	8	1.3	1.7	7	0.9	1.5	7	0.8	1.3	22
HABITABILITY												
Hot Cups	0.3	0.5	8	0.6	1.0	7	2.4	2.4	7	1.0	1.7	22
Food and Beverage Storage	2.0	2.0	8	1.0	1.9	7	1.0	1.8	7	1.4	1.9	22
Head	2.5	2.3	8	2.7	2.3	7	2.1	2.0	7	2.5	2.1	22
Area to Rest	0.4	0.7	8	0.1	0.4	7	0.3	0.5	7	0.3	0.6	22
HVAC System	0.3	0.5	7	1.4	2.1	7	0.9	1.5	7	0.9	1.5	21
Weapons Storage	1.0	1.9	7	1.0	1.9	7	2.2	2.3	6	1.4	2.0	20
Interior Insulation	2.1	2.3	8	4.3	1.9	7	2.7	2.1	7	3.0	2.2	22

Scale: 0 = not a problem; ok as it is; not needed
1 = slight problem; might like to have this added; low priority
2
3 = moderate problem; would like to have item added; moderate priority
4
5 = big problem; definitely add this item; high priority

Key: $\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman apprentices were included as Engineers.

Table H-4. Station Gloucester: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
DECK												
Aft Hatch	0.8	1.5	4	0.6	1.0	9	0.4	1.1	7	0.6	1.1	20
Chocks	2.8	0.5	4	1.8	1.7	9	1.1	1.5	7	1.8	1.5	20
Bitts	0.8	1.0	4	1.7	2.1	9	1.6	2.3	7	1.6	2.0	20
Tow Reel/Tow Bitt	0.3	0.5	4	0.8	1.3	9	0.3	0.8	7	0.5	1.0	20
Spot Light	1.0	2.0	4	3.0	1.3	9	3.1	1.7	7	2.7	1.7	20
Pickup Port/Grating	1.5	1.3	4	1.9	1.8	9	3.0	1.7	7	2.2	1.7	20
Non-skid Pads	5.0	0.0	4	5.0	0.0	9	4.8	0.5	7	4.9	0.3	20
Paint	5.0	0.0	4	3.1	1.5	9	2.1	2.1	7	3.2	1.9	20
Aft Deck Space	2.0	1.4	4	1.1	1.3	9	0.6	1.0	7	1.1	1.3	20
D-rings	1.3	1.9	4	1.2	1.6	9	1.1	1.2	7	1.2	1.5	20
Handholds	2.0	1.6	4	1.3	1.4	9	1.4	1.3	7	1.5	1.4	20
Rub Rails	1.0	0.8	4	1.0	1.3	9	0.9	1.5	7	1.0	1.2	20
Forward Hand Rails	2.0	2.2	4	1.1	1.5	9	0.9	0.9	7	1.2	1.5	20
Firefighting Equipment	5.0	0.0	4	4.3	0.9	9	3.6	2.0	7	4.2	1.4	20
ENGINE ROOM												
Deck Plates	1.8	2.2	4	1.4	1.7	9	2.9	1.3	7	2.0	1.7	20
Tool Box	1.0	2.0	4	0.2	0.4	9	0.7	1.9	7	0.6	1.4	20
Bilge Pump Indicator	2.5	2.9	4	1.9	2.4	9	2.7	2.4	7	2.3	2.4	20
Space	0.3	0.5	4	0.3	0.5	9	1.7	2.0	7	0.8	1.4	20
Sea Strainer (Checks)	1.8	2.4	4	1.4	1.7	8	3.3	1.8	7	2.2	2.0	20
Lazarette Hatch	1.5	1.7	4	3.3	1.7	9	3.4	1.3	7	3.0	1.7	20

Table H-4. Station Gloucester: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Fuel Capacity	1.8	2.4	4	2.8	1.2	9	3.0	1.2	7	2.7	1.5	20
FLYING BRIDGE												
External Speakers	1.5	2.4	4	1.7	1.4	9	1.3	1.9	7	1.5	1.7	20
Radar Protective Door	1.3	1.9	4	1.1	2.0	9	0.7	1.3	7	1.0	1.7	20
Microphone Box	2.0	2.4	4	3.3	1.2	9	1.7	1.9	7	2.5	1.8	20
Steering/Throttle	4.0	1.4	4	4.2	0.8	9	3.7	1.8	7	4.0	1.3	20
Crew Member Seats	1.3	2.5	4	1.0	1.1	9	0.9	0.9	7	1.0	1.3	20
Communication Equipment	4.3	1.0	4	3.1	1.5	9	2.7	2.1	7	3.2	1.7	20
Datum Point Marker	2.0	1.8	4	1.6	1.9	9	2.1	1.8	7	1.9	1.8	20
Protection from Environment	2.5	2.1	4	2.7	1.6	9	2.1	1.0	7	2.5	1.5	20
Instrument Station	0.5	0.7	2	1.8	1.8	9	1.3	1.3	7	1.4	1.5	18
ENCLOSED BRIDGE												
Crew Member Seats	3.8	2.5	4	3.8	1.4	9	3.7	1.4	7	3.8	1.6	20
Defroster (HVAC)	0.8	1.5	4	1.4	1.8	9	0.4	0.8	7	1.0	1.5	20
Forward Visibility	0.5	0.6	4	1.7	1.1	9	0.3	0.5	8	1.0	1.1	20
Space	2.8	2.2	4	2.1	1.5	9	2.7	2.0	7	2.5	1.8	20
Electronics	3.3	1.3	4	3.1	0.9	9	2.1	1.8	7	2.8	1.4	20
GPS	3.3	2.4	4	4.7	0.8	7	3.4	1.9	7	3.9	1.7	20
Coxswains' Chairs	0.5	1.0	4	1.4	1.6	9	0.0	0.0	7	0.8	1.3	20
Navigation Area	3.3	1.3	4	2.6	2.2	9	2.1	1.9	7	2.6	1.9	20
FORWARD COMPARTMENT												
HVAC	1.8	2.4	4	3.2	2.0	9	3.1	2.0	7	2.9	2.0	20

Table H-4. Station Gloucester: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Deck Plates	2.8	2.1	4	2.2	1.9	9	1.9	1.8	7	2.2	1.8	20
Use of Space	0.0	0.0	4	0.2	0.7	9	0.0	0.0	7	0.1	0.4	20
SURVIVORS' COMPARTMENT												
Deck Surface	4.3	1.0	4	1.8	1.9	9	2.0	1.4	7	2.4	1.8	20
Deck Plate Fasteners	3.8	1.9	4	2.7	1.8	9	3.1	2.3	7	3.1	1.9	20
Bench Seats	1.5	1.0	4	1.8	1.2	9	1.7	2.0	7	1.7	1.4	20
HABITABILITY												
Hot Cups	2.3	2.6	4	2.6	2.3	9	3.0	2.3	7	2.7	2.3	20
Food and Beverage Storage	2.3	2.6	4	3.7	2.2	9	3.1	1.8	7	3.2	2.1	20
Head	2.3	2.6	4	1.0	1.6	9	1.6	1.7	7	1.5	1.8	20
Area to Rest	1.0	1.4	4	0.4	0.5	9	1.4	1.4	7	0.9	1.1	20
HVAC System	0.0	0.0	4	0.7	1.1	9	0.7	1.1	7	0.6	1.0	20
Weapons Storage	2.5	1.7	4	3.1	2.3	9	3.3	2.1	7	3.1	2.0	20
Interior Insulation	3.8	2.5	4	4.1	1.7	9	4.0	1.5	7	4.0	1.7	20

Scale: 0 = not a problem; ok as it is; not needed
1 = slight problem; might like to have this added; low priority
2
3 = moderate problem; would like to have item added; moderate priority
4
5 = big problem; definitely add this item; high priority

Key: $\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman apprentices were included as Engineers.

Table H-5. Station Cape May: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
DECK												
Aft Hatch	0.2	0.4	12	0.3	0.8	14	0.7	1.1	9	0.3	0.8	35
Chocks	1.7	1.7	12	1.6	1.6	14	1.8	2.0	9	1.7	1.7	35
Bitts	0.8	1.4	12	1.4	1.3	14	1.0	1.4	9	1.1	1.3	35
Tow Reel/Tow Bitt	0.9	1.6	12	0.6	1.2	14	1.0	1.8	9	0.8	1.5	35
Spot Light	2.5	1.9	12	2.5	2.2	14	1.7	1.7	9	2.3	2.0	35
Pickup Pord/Grating	1.8	1.7	12	1.3	1.5	14	2.3	2.1	9	3.1	1.9	35
Non-skid Pads	4.1	1.2	12	2.7	2.0	14	2.3	2.2	9	3.1	1.9	35
Paint	1.9	2.0	12	2.1	1.9	14	1.1	1.8	9	1.8	1.9	35
Aft Deck Space	1.3	1.4	12	0.9	1.3	14	0.4	1.3	9	0.9	1.3	35
D-rings	2.3	2.3	12	1.8	1.8	14	0.7	0.9	9	1.7	1.9	35
Handholds	1.4	2.1	12	1.6	2.0	14	1.7	1.9	9	1.5	2.0	35
Rub Rails	0.7	1.5	12	1.4	1.6	14	1.3	1.8	9	1.1	1.6	35
Forward Hand Rails	1.2	1.5	12	0.9	1.6	14	1.4	1.7	9	1.1	1.6	35
Firefighting Equipment	4.5	0.5	12	4.0	1.4	14	4.6	0.9	9	4.3	1.1	35
ENGINE ROOM												
Deck Plates	1.2	1.9	12	3.2	1.6	13	4.6	0.7	9	2.9	2.0	34
Tool Box	1.2	1.9	12	1.9	2.0	13	2.3	2.2	9	1.8	2.0	34
Bilge Pump Indicator	0.3	0.7	12	1.8	2.0	13	1.8	1.7	9			

Table H-5. Station Cape May: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Fuel Capacity	0.7	1.3	12	1.7	2.2	13	1.1	1.5	9	1.2	1.8	34
FLYING BRIDGE												
External Speakers	1.4	1.8	12	2.2	2.0	14	1.6	1.8	9	1.8	1.8	35
Radar Protective Door	1.9	1.9	12	2.1	2.0	14	1.4	1.6	9	1.9	1.8	35
Microphone Box	1.5	2.0	12	2.6	2.2	14	1.7	2.1	9	2.0	2.1	35
Steering/Throttle	1.4	1.6	12	2.6	2.2	14	1.0	1.5	9	1.5	1.6	35
Crew Member Seats	1.8	1.7	12	1.0	1.4	14	2.0	2.2	9	1.5	1.8	35
Communication Equipment	2.1	2.1	12	2.4	2.2	14	1.7	1.8	9	2.1	2.0	35
Datum Point Marker	2.2	2.2	12	1.1	1.5	14	1.1	1.5	9	1.5	1.8	35
Protection from Environment	1.6	1.6	12	1.4	1.5	14	0.6	0.9	9	1.2	1.4	35
Instrument Station	0.9	1.4	12	2.1	2.0	14	1.0	1.7	9	1.4	1.8	35
ENCLOSED BRIDGE												
Crew Member Seats	2.3	2.1	12	2.5	2.0	14	3.0	2.0	9	2.6	2.0	35
Defroster (HVAC)	0.9	1.6	12	1.6	2.0	14	1.8	1.8	9	1.4	1.8	35
Forward Visibility	1.4	1.6	12	0.6	0.9	14	0.4	1.0	9	0.8	1.2	35
Space	1.4	1.5	12	1.8	1.5	14	1.1	1.3	9	1.5	1.4	35
Electronics	1.5	2.0	12	1.5	1.5	14	1.1	1.5	9	1.4	1.6	35
GPS	2.0	2.0	12	2.6	2.2	14	0.6	1.7	9	1.9	2.1	35
Coxswains' Chairs	1.9	2.2	12	1.8	1.9	14	1.2	1.5	9	1.7	1.9	35
Navigation Area	1.8	1.5	12	2.1	1.8	14	1.0	1.4	9	1.7	1.6	35

Table H-5. Station Cape May: Evaluation of problem or wish list items.

PROBLEM OR WISH LIST ITEM	RATING											
	Seamen			Boatswain's Mates			Engineers			Station		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$	SD	N
FORWARD COMPARTMENT												
HVAC	1.3	1.8	12	2.3	1.9	14	2.6	2.4	9	2.0	2.0	35
Deck Plates	1.8	1.9	12	2.4	1.9	14	2.8	2.2	9	2.3	1.9	35
Use of Space	0.5	1.2	12	0.0	0.0	14	0.3	1.0	9	0.3	0.9	35
SURVIVORS' COMPARTMENT												
Deck Surface	2.8	1.9	12	1.9	2.0	14	0.9	1.5	9	1.9	1.9	35
Deck Plate Fasteners	2.1	2.0	12	2.6	2.2	14	2.7	2.2	9	2.4	2.1	35
Bench Seats	1.1	1.5	12	1.0	1.7	14	0.1	0.3	9	0.8	1.4	35
HABITABILITY												
Hot Cups	0.4	0.8	12	0.1	0.4	14	0.3	0.7	9	0.3	0.6	35
Food and Beverage Storage	2.8	2.2	12	1.8	2.1	14	1.4	1.7	9	2.1	2.1	35
Head	2.3	2.2	12	1.9	2.1	14	1.2	1.9	9	1.9	2.1	35
Area to Rest	1.5	1.9	12	1.5	1.7	14	0.0	0.0	9	1.1	1.7	35
HVAC System	1.7	1.9	12	2.8	1.9	14	1.9	2.1	9	2.2	2.0	35
Weapons Storage	3.3	2.2	12	2.1	2.2	14	2.0	2.0	9	2.5	2.1	35
Interior Insulation	2.5	1.9	12	2.1	2.3	14	2.0	1.7	9	2.2	2.0	35

Scale: 0 = not a problem; ok as it is; not needed
1 = slight problem, might like to have this added; low priority
2
3 = moderate problem; would like to have item added; moderate priority
4
5 = big problem; definitely add this item; high priority

Key: $\bar{X}$ = mean
SD = standard deviation
N = number of crew members responding

Note: Seaman apprentices and a Marine Science Technician, who serves as a crew member, were included as Seamen. Fireman apprentices were included as Engineers.